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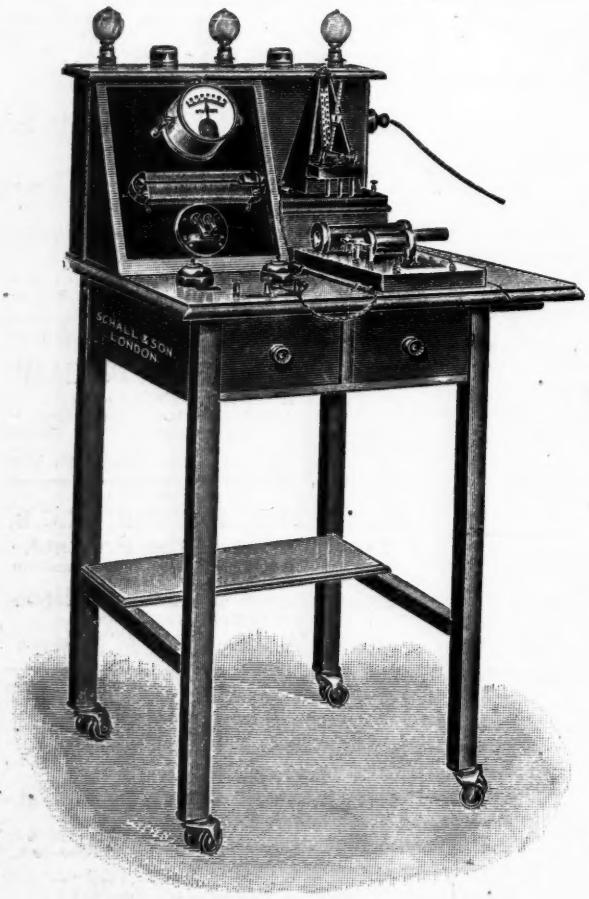


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# THE EPIDEMIOLOGICAL POINT OF VIEW.*

BY

MAJOR GREENWOOD,

MEDICAL OFFICER, MINISTRY OF HEALTH; FORMERLY STATISTICIAN TO THE LISTER INSTITUTE OF PREVENTIVE MEDICINE.

THE material of the epidemiologist is not peculiar to him; like the clinician and the pathologist he devotes himself to the study of disease in its varied forms; all see the same objects, but they see them from different points of view. If we wished to study the architecture and topography of this city of Cambridge we could adopt one of three courses. We might go through the streets and colleges with a guide; we might select some representative building for special study; or we might obtain a bird's-eye view of all from an aeroplane. Each method has its advantages and disadvantages. The first must be preferred if it is most important to us to learn how to go quickly from one part of the city to another, and to recognize what we see in passing; the second gives a mastery and appreciation of intimate detail; the third brings out the inter relations of different parts. In medicine, the first method is that of the practising clinician; the second that of the scientific pathologist; the third that of the epidemiologist. The science of general medicine should integrate results obtained by the several methods.

The epidemiologist is therefore an observer from the mountain top, concerned with disease as a mass phenomenon; his business is not with individuals but with aggregates. He seeks to define the relations of these aggregates, the general arrangement of the streets in the cities of the plain, but is not concerned with details.

This point of view was once adopted by all physicians, and some have accordingly argued that the duty of an epidemiologist is to take Hippocrates as his guide, and to seek intellectual salvation amid the classical writers. But there are objections to this theory. When there are no paths down from the mountain to the cities of the plain, the inhabitant of the mountain *must* content himself with distant views. If Hippocrates had had a modern equipment he might still have preferred the method he actually adopted; but he might not have done so; he had no choice.

There is also a practical difficulty in attempting to adopt the classical standpoint—the danger of finding in ancient writings what is not there. Let me give an example. In the third book of the *Epidemics* the following passage occurs:

"Hermocrates, who lived by the new Wall, was seized with fever. He began to have pain in the head and loin; an empty distention of the hypochondrium; the tongue at first was parched; deafness at the commencement; there was no sleep; not very thirsty; urine thick and red, when allowed to stand it did not subside; alvine discharges very dry, and not scanty."

And so forth; the patient died on the twenty-seventh day. Insert a few records of pulse and temperature and you will have a story to be paralleled in many thousands of clinical note-books. But the text is classical, and here is the comment—not from *Tristram Shandy*, but from the translation of Ramazzini's pioneer treatise *de Morbis Artificum*, made by Dr. Johnson's friend and schoolfellow, Dr. James:

"Hippocrates gives us the famous history of Hermocrates, who was seized with a mortal fever upon lying by a new Wall. And though *Vallesius*, following Galen's footsteps, alledges, that the new Wall had no relation to the cause of the Disease; yet *Epiphanius Ferdinandus* and *Mercurialis* are justly of the opinion that *Hippocrates* mentioned the new Wall with an Intention to point out the Cause of the Disease, there being nothing more dangerous than to live in a House newly built with Lime: Witness the sad Experience of many, who have thereupon died either of Suffocation, or of a Fever accompanied with a Deafness or Stumor, as happened to *Hermocrates*, who died on the 27th Day. My Lord *Verulam*, says *Jovinian* the Emperor, catched his Death by staying too long in a Room the Walls whereof had been newly washed or done over with Lime."†

We need not smile at this with confidence in our superior virtue; most people can find in the classics what they are looking for, and it is not only the eighteenth century which affords medical parallels to Sir Edward Coke's invention of Magna Charta and Sir Henry Spelman's introduction of the Feudal System into England. It is easy for anyone to assert that his epidemiological principles are those of Hippocrates, because Hippocrates's epidemiological doctrine, contained in a few short treatises incorporating much clinical description, is expressed in such general language that anyone may make of it pretty much what he pleases. The real value to the epidemiologist of a study of Hippocrates is not the provision of a key to all the mythologies, but that general quickening of the intelligence which great literature produces.

"With regard to diseases, the circumstances from which we form a judgement of them are—by attending to the general nature of all, and the particular nature of each individual, to the disease, the patient, and the applications, to the person who applies them, as that makes a difference for better or for worse, to the whole constitution of the season, and particularly to the state of the heavens, and the nature of each country, to the patient's habits, regimen, and pursuits." (*Epidemics*, I, 10.)

Such a passage as that—and I choose it almost at random—helps us to free ourselves from the narrowness of mere technicality, but it can hardly do more. I do not think a detailed examination of epidemiological teaching before the days of Sydenham a suitable introduction to the subject of these lectures.

When we come to Sydenham the case is altered. No doubt Sydenham has been over-praised, and neither the Ciceronian periods which obscure his meaning nor the uncharitable tone of his comments upon brother practitioners conciliate the favour of a modern student; yet Sydenham has claims to special consideration.

The ancient observers were not upon a mountain top of their own choice; Sydenham was. He could not have employed the technical methods of our time; the paths down to the plain were few and rough; but they existed. He was the contemporary of great pathological anatomists; he might have attended the meetings of the Royal Society. It was of his own motion that pathological anatomy was excluded from his works, and that such pathological discussions as we do find there were perfunctory and traditional, containing hardly anything beyond the reach of Dr. Caius. In our own generation Dr. Charles Creighton adopted an attitude of detachment from the current interests of his bacteriological contemporaries; nobody who derived his impressions of late nineteenth century medical thought from the *History of Epidemics in Britain* would suppose that any serious minded man attached importance to bacteriology. Sydenham's indifference to the science of the seventeenth century was as complete; he comes before us as the exponent of a medical, an epidemiological philosophy, the nature of which we must discuss because it has greatly influenced subsequent writers and retains a measure of importance.

Sydenham contributed both to the practice and the theory of epidemiology; he was both a technician and a philosopher. As a technician he particularized the generalities of the passage I quoted from Hippocrates. He laid it down that personal knowledge of the facts was the pre-requisite of epidemiological theory, and he became the first great modern annalist of epidemics. In this respect, as a technician, he was not original, and followed the general lines of the authors of the Coan school. But he modified their technique—not always with advantage—and his annals contain fewer descriptions of individual cases; to use my metaphor again, he did not focus his telescope upon particular houses in the city of the plain, but embraced wide prospects in his view. The inductions based upon his technical researches were three. While admitting a specificity, a breeding true to type, in diseases he thought that each specific disease underwent a long period evolution, rising, declining, and falling; he illustrated this argument from the history of small-pox in Europe and leprosy in England, and predicted that diseases paramount in his time would run their course and give place to others "*de quibus nos ne minimum quidem hariolari valemus.*" This doctrine of secular variation is no longer controversial; modern epidemiologists are busied with the subsidiary problem of how secular change is produced. Are the periods of decline definitive? Is the metaphor of a declining empire or of an animal species tending to extinction just? Or is the apparently definitive decline of such diseases as plague or scarlet fever merely the trough of a periodic wave, the swing of the secular pendulum being very long? These are unanswered questions still; we are

* An introduction to a course of lectures on epidemiology delivered in the Cambridge Medical School, July, 1919.

† James's translation of Ramazzini on "the Diseases of Tradesmen," London, 1746, p. 186.

only now slowly and painfully constructing the technical apparatus required to answer them.

The second great contribution of Sydenham was to the study of short period movements in the prevalence of diseases –the seasonal variations of epidemics. Without being a pioneer, he first made the influence of meteorological conditions upon the prevalence of disease familiar by means of well selected illustrations, and, as in the last-mentioned case, the duty of modern epidemiologists has been confined to the accumulation of details and the discussion of mechanisms.

The third contribution of the English Hippocrates to our subject is harder to explain; I refer to the theory of epidemic constitutions. The doctrine, which has been rendered almost mystical by the glosses and extensions of later authors, seems to have amounted to this: Although different acute diseases are specific in origin, they tend to vary in their clinical manifestations from time to time and to vary together; the common type changes, but different specific forms converge towards the fashionable type; much as specifically distinct butterflies and moths come to resemble externally a common form (mimicry). This convergence to a particular type of all diseases prevalent during a particular cycle of years is the work of unknown terrestrial causes and the general resultant is called the epidemic constitution.

To make the notion clearer, let me exaggerate a little. Epistaxis and cardiac arrhythmia may and do occur in many specifically distinct acute diseases. If at one period all affected by influenza, typhoid, lobar pneumonia, measles, etc., were to suffer from nose bleeding, and in another cycle of years the same diseases were all associated clinically with cardiac arrhythmia, we should say that in the former period the epidemic constitution was one of epistaxis and in the latter cardiac.

Actually Sydenham did not use so clear cut a nomenclature, but christened the constitution with the name of the specific disease which most nearly united the complex of symptoms to which other diseases then raging clinically converged. Hence he speaks of a pestilential constitution, a variolous constitution, and so forth. But, notwithstanding some inconsistencies in his statements, it seems clear that he did not suppose all diseases prevalent under a variolous constitution to be more or less disguised small-pox, but that, owing to the prevailing constitution, other diseases took on themselves the character of the particular small-pox which was then observed. The truth of this doctrine is certainly not universally admitted, but the importance of determining whether it is true or false is great. Translated into modern terminology, it means that in estimating the total effects produced upon morbidity and mortality by diseases, the non specific secondary invaders are as important as the specific causes. The camp followers of an army may do more damage than the regular soldiers, and the same camp followers may ravage in the wake of different armies; shall we get rid of desolation merely by interning or killing particular armies? To Sydenham belongs the credit of suggesting this difficult and rather disheartening question, which still remains unanswered.

These remarks may help you to estimate the personal success of Sydenham. His positive achievements in epidemiology may not have been great; the map of the country he prepared from his hilltop observations was neither detailed nor accurate, but he did suggest a method, an instrument to be used in epidemiological cartography, for he was the first modern field epidemiologist, a remote and collateral ancestor of Simon, Budd, the investigators of the Local Government Board, and of the great municipal departments of preventive medicine in the last fifty years.

But the spiritual descent has been indirect. Sydenham did not found any school of epidemiology in his lifetime, and his immediate successors failed to grasp the real significance of his teaching. Some, indeed—for instance, Huxham and Wintringham—were excellent analysts; Pringle was something more, but, on the whole, the influence of Sydenham upon eighteenth century thought was not good. As a German historian has remarked, the contemner of fine-spun theories was the literary original of a system of speculation which in the writings of some—particularly the members of the Montpellier faculty—lacked little of the ingenuity of scholasticism, and was not more leavened by contact with objective data.

The reason of this sterility is that Sydenham's inductions outran his data; not enough material had been assembled to justify the conclusions. Sydenham himself knew this; his less acute imitators forgot it. Hence it comes about that a much humbler contemporary of Sydenham, one who was neither a medical man nor, in our modern sense, a scientific man, influenced the subsequent progress of epidemiology more directly and more favourably than did the illustrious physician.

This contemporary was John Graunt, citizen and draper, of London, whose *Natural and Political Observations upon the Bills of Mortality* appeared in 1662.

The direct value of Graunt's work was considerable; he was, indeed, the ancestor of vital statisticians. He first had the sagacity to perceive that important deductions might be made from the forbidding series of numerals which constituted, and still constitutes, a bill of mortality. His remark

> "that there is much pleasure in deducing so many abstruse and unexpected inferences out of these poor despised Bills of *Mortality*; and in building upon that ground, which hath lain waste these eighty years. And there is pleasure in doing something new, though never so little, without pestering the World with voluminous transcriptions"

is just. No doubt Graunt's statistical methods were primitive and his arithmetical accuracy at times suspect; but, almost 200 years before Quetelet, he recognized the constancy of statistical ratios involving mass phenomena; he first noticed the preponderance of male births* and the later equalization of the sexes; he first showed statistically that the rate of mortality was very high at early ages, and statistically demonstrated the contrast between urban and country rates of mortality.

These direct achievements, which proved that the statistical method was of value in epidemiology, were important. Still more important were the indirect results of Graunt's work. It is, as Dr. Hull pointed out, likely that Graunt's work had some influence upon Halley (both Graunt and Halley were Fellows of the Royal Society), the scientific founder of life assurance; it is certain that William Derham's *Physico-Theology* owed something to Graunt. From Derham's book the Prussian military chaplain, Johann Peter Süssmilch, learned of Graunt's paper, which stimulated him to write the *Göttliche Ordnung*, assumed by German historians to be the pioneer treatise on vital statistics, and, in truth, a powerful work upon which Malthus largely drew in the later editions of his essay on population. To the efforts of the political associates of Malthus we owe the foundation of the General Register Office. To the publications of the General Register Office epidemiologists rightly attach as much importance as did the Puritans to the Hebrew Scriptures.

The developments of the two scientific methods—that of statistics and that of clinical field observation—were not co-ordinated for generations. As the events of the great war have led to the co-operation of isolated investigators now, the evil effects upon the public health which were by-products of the industrial revolution so far touched the national conscience then, that the state was forced to encourage co-operative investigation. Before the close of the eighteenth century such writers as Percival, whose famous memorandum was submitted to the Manchester Board of Health in 1796,† pointed out the need of investigation, and within fifty years contact had been established between the exponents of field and statistical epidemiology.

To the younger student of to-day the epoch of medical history which is of most importance is that covering the first fifty years of Queen Victoria's reign; it comprises the main period of activity of Farr and Simon, the greatest exponents of the statistical and field methods which must

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* Professor Gini (*Il Sesso*, Milan, 1908, p. 28), while reserving priority in this matter to his countryman Giovanni Villani, pays the following graceful compliment to Graunt: "Il merito di averne posta in evidenza la regolarità, attraverso lo spazio ed il tempo, e di averlo reso popolare alla scienza, che doveva poi occuparsene così di frequente, spetta tutto allo scritore inglese." Graunt's writings are reprinted, with good notes, in Professor Hull's edition of the *Economic Writings of Sir William Petty* (Cambridge, 1899).

† Reprinted on p. 495 of *Select Documents of English Economic History*, edited by Bland, Brown and Tawney (London, 1915).

be employed by an epidemiologist.* I have no time to describe in detail any of the achievements of these great investigators, but may attempt to characterize the spirit in which they worked. These men were not mere highly expert technicians; they knew that the mountain-top observer could not rely upon the telescope alone or upon the camera alone. Farr did not think that epidemiology was but a branch of mathematics; Simon did not look upon it as a mere blend of unsystematic botany and history. They fully realized that the song was of the man as well as of the arms; that the conditions of human life—both, as we now say, environmental and eugenic—were quite as important to the epidemiologist as the *materies morbi*.

Although since the days of Farr and Simon the technical methods at the disposal of the epidemiologist have been greatly improved, there has not been a corresponding improvement in the general quality of epidemiological work. There are two reasons for this: Those in official positions giving scope for epidemiological work have been increasingly burdened with administrative duties and less unfettered in their choice of subjects; the private investigator has either become enamoured of the pure technique, more interested in the fashioning of tools than in the shaping of material, or has been tempted to abandon epidemiology for the dazzling prospects of research in bacteriology and pathology. The result is that, while some epidemiological work is tendencious, some exclusively mathematical, some a mere padding of bacteriological papers, hardly any can bear comparison not merely with Farr's or Simon's, but with that of their pupils.

The science and art of medicine cannot be developed harmoniously if the epidemiological point of view is neglected; there is still much to be learned which only the epidemiological method can teach. It is our duty to continue the work of those who went before. From the Delectable Mountains the pilgrims could not indeed gaze steadfastly through the "perspective glass" towards the city, but yet "they thought they saw something like the gate and also some of the glory of the place."

# AN EXPERIMENTAL INVESTIGATION OF CERTAIN MATERIALS USED FOR NERVE SUTURE.†

BY

PERCY SARGENT, C.M.G., D.S.O., F.R.C.S.,
TEMPORARY LIEUT.-COLONEL R.A.M.C.,

AND

J. G. GREENFIELD, M.B., M.R.C.P.,
TEMPORARY CAPTAIN R.A.M.C.

(From the Research Laboratory established by the Medical Research Committee at the Tooting Special Military Surgical Hospital.)

[*With Special Plate.*]

THE investigation here recorded was undertaken with a view to ascertaining which of the many materials in general use as nerve sutures was least likely to produce harmful reaction in the delicate tissue of nerve.

It had previously been noted in the histological examination of a large number of lesions of nerves due to gunshot wounds that the presence of any foreign body in the substance of the nerve was liable to produce great hyperplasia both of the connective tissue and of the neurilemma cells, and that with this there was usually associated poverty in axons and in myelin sheaths. This was observed especially in association with hard unabsorbable foreign bodies such as particles of bone or of metal. In these cases it is probable that regeneration of the nerve was further retarded by the presence of sepsis. But at a later stage, when there was no histological evidence of sepsis, it appeared to be still impossible for young axis cylinders to penetrate the neuroma thus formed in sufficient numbers to restore the function of the nerve. It seemed, therefore, important to ascertain what amount of reaction to the various suture materials in common use took place within a nerve, and the nature of this reaction. For if a suture causes much reaction around it, and especially if it causes proliferation of the connective tissue elements, it may constitute a considerable hindrance to the regeneration of the nerve.

It must be confessed that, in spite of much careful work on the subject, especially by the French neurologists, our knowledge of the exact changes which take place in a nerve after suture is still somewhat indefinite, especially as regards the part taken by the neurilemma cells and the connective tissue elements. It seems to be clearly enough established that finger-like prolongations of the neurilemma sheath spread out into the intervening tissue from both ends of a divided nerve. As regards the proximal end it is probable that this takes place independently and in advance of the axis cylinders. These outgrowths penetrate the intervening tissue along the lines of least resistance, and, when dense fibrous tissue is present, either make their way around it or penetrate it by separation of its bundles and planes. In such a case a number of the outgrowths may find it increasingly difficult to force a passage until they may be unable to proceed further. Where some easily penetrated tissue, such as granulation tissue, intervenes, they pass through it readily enough, branching repeatedly, and giving rise to a small plexiform neuroma. The new nerve fibrils passing along the channels thus made are scattered and separated, so that they run at first in bundles of two or three; later, more numerous fibrils run down alongside the first, until a rope-like bundle of twenty or more interlacing fibrils passes down the neurilemma pathway. These bundles of fibrils become collected more densely together when they reach the old neurilemma sheaths of the distal nerve segment, and in them run straight to their termination.

The reactions of the neurilemma and connective tissue in the distal segment are similar in every respect, and result in the formation of a nerveless "neuroma."

Any suture passed through a nerve gives rise to tissue reactions, whose effect is to put an obstacle in the path of the axonic downgrowth; the degree of such hindrance will vary with the thickness, absorbability, and irritative character of the suture material. It is upon these criteria that such materials must be judged.

## METHODS OF INVESTIGATION.

Our investigations were chiefly directed to the second and third of these points, as it is clear that the thickness of the suture must depend upon its tensile strength and may have to be varied in accordance with local conditions, such as the size of the nerve and the strain to be sustained. It was considered best, having regard to the small size of the nerves on which the investigation was carried out, as well as to the question of rate of absorption, to use as far as possible a series of sutures of the same thickness—namely, 00.

The sciatic nerves of rabbits were chosen, as being easily accessible, and providing a large enough nerve to make sure that the suture actually transfixed a nerve bundle. The nerve was exposed close to its point of emergence from the pelvis by cutting through the gluteus muscle. The largest bundle present (usually the internal popliteal) was transfixed by a fine needle and the suture brought through it and tied firmly but not tightly. After a period of twenty-one days or longer the animal was sacrificed and the nerve removed and examined. For the examination van Gieson's method for celloidin sections was used, as it gives a good general picture of the cellular reaction both in the connective tissue and the neurilemma sheath, as well as of the axis cylinders. The gastrocnemius group of muscles was also examined, but as the amount of paralysis which resulted from the suture depended on so many factors—for example, tension of the suture, amount of nerve implicated, etc.—the results of this examination are not included in this paper. In most cases this paralysis was slight and transient.

## DETAILS OF EXPERIMENTS.

*Experiment I.*

Rabbit (21 days). June 14th, 1918 (ether anaesthesia): Right sciatic, 30 day chromic gut, No. 00. Left sciatic, Stiles's linen

* Farr's epidemiological writings have not been reprinted in full, but the student will find copious selections in the memorial volume edited for the Sanitary Institute by Mr. Noel Humphreys (London, 1885). An excellent example for the student of the spirit and methods of Simon and his school is afforded by Greenhow's report on the different prevalences of certain diseases in different districts in England and Simon's prefatory essay (printed for the Stationery Office, London, 1858).

† Report to the Medical Research Committee.

thread, No. 160. July 5th, 1918: Nerves examined and removed. Right sciatic considerably thickened and pieces of suture seen sticking out of it. Left sciatic showed only slight diffuse thickening at the site of the suture.

*Microscopic Examination.*

*Right Sciatic* (Fig. 1).—The site of the suture is shown by a rounded area inside a thin fibrous capsule. It is composed of two zones, the outer of which measures about one-third of the radius, but is thicker in some places than in others. This zone is composed of epithelioid cells of varying size, most of them oval, others more spindle-shaped, and of connective tissue cells and fibres, which run between the epithelioid cells. In addition to these there is a large number of giant cells, varying from 50 to 100 microns in size, either with very few nuclei arranged round the edge, or with clumps of nuclei near the periphery. Some of these cells show inclusions of dead cells, but for the most part their cytoplasm is uniform and granular. This zone is extremely vascular, with numerous capillary vessels lying between the connective tissue fibres. Internal to this zone is a solid mass of cellular débris, mainly composed of pus cells along with a few macrophage cells, some of which contain fragments of catgut as inclusions. This area is completely avascular and shows no connective tissue fibres. Fairly thick pieces of the suture remain unabsorbed. As it approaches the nodule thus formed, the nerve becomes much more vascular, and the cells of the connective tissue and the neurilemma sheath increased in number, so that its characteristic appearance is completely lost.

*Left Sciatic* (Fig. 2).—The suture has been to a small degree absorbed, but the site remains as a hole in the tissue out of which the suture has fallen in the process of sectioning, but numerous fragments of thread are seen all round the edge of the cavity in contact with the epithelioid cells which line it. In addition, small oblong pieces are seen in vacuoles in large giant cells even at some distance from the edge of the cavity. There is a slight attempt at encapsulation, but while the fibrous tissue is increased in amount it is very irregularly arranged, and the large giant cells are seen lying among its fibres.

The edge of the cavity is composed of oval epithelioid cells with large clear nuclei, and in no place is there any small-celled infiltration. The giant cells nearest the edge of the cavity have a considerable number of darkly staining nuclei, which are packed so closely together as to give the appearance of a solid black mass. The epithelioid tissue is extremely vascular, with minute capillary vessels lying between the cells. The nerve, on reaching this area, breaks up into a neuroma, and it is extremely difficult to distinguish this neuroma tissue from the epithelioid tissue, into which it seems to merge. There appears to be no doubt that both the epithelioid cells and the giant cells are formed from cells of the neurilemma sheath.

*Experiment II.*

Rabbit (21 days). June 25th, 1918 (ether anaesthesia): Right sciatic, Stiles's fine linen thread, No. 160, waxed with Horsley's bone wax. (Nerve cut.) Left sciatic, no suture. July 18th, 1918: Rabbit killed and nerve examined and removed. It showed a slight neuroma at the site of the suture.

*Microscopic Examination.*

*Right Sciatic* (Fig. 3).—The reaction around the suture is partly on the part of the sheath shells, but there is very much more fibrous tissue formation than in Experiment I. By van Gieson's method pink staining fibres are seen separating all the epithelioid cells. On the other hand, it does not seem as if all the reaction were fibroblastic, as the nerve is seen to run close up to the suture, and new fibres run round the area of the stitch hole. The zone of reaction has about the same width—that is, three times the diameter—as the stitch hole. The suture is partially absorbed by giant cells similar to those in Experiment I. These are, however, for the most part smaller and more regularly rounded than in that case, and the nuclei vary in number, the cells lying close to the cavity having a dense mass of nuclei in one or both poles, while the more peripherally situated giant cells have a sparser zone of pale-staining nuclei around the periphery.

The nerve itself shows a considerable amount of connective tissue hyperplasia, which may be due to its having been sectioned.

*Experiment III.*

Rabbit (21 days). July 5th, 1918 (ether anaesthesia): Right sciatic, Japanese silk, No. 00. Left sciatic, Japanese silk, No. 00, waxed. July 26th, 1918: Rabbit killed and sciatic nerves removed. Left nerve found to be considerably more swollen than the right.

*Microscopic Examination.*

*Right Sciatic* (Fig. 4).—The suture is very little absorbed, and is surrounded by a fairly dense cellular zone, which is, however, rather narrow. The innermost layer is mainly composed of oval cells with large pale-staining oval nuclei, but among these are several degenerated cells showing karyorrhexis. In this zone, and for the most part lying right on the edge of the cavity, there are fairly large giant cells with multiple nuclei placed centrally. Outside this is a zone of concentric fibrous cells, some of which give the pink staining of connective tissue while others resemble sheath cells. Around this is neuroma formation, with a considerable amount of connective tissue hyperplasia. The nerve breaks up into a neuroma at a considerable distance from the suture, and has commenced to form new axis cylinders in this neuroma.

*Left Sciatic* (Fig. 5).—The reaction on this side is very similar, except that (1) there are more degenerated cells in relation to the particles of silk, (2) the innermost zone of mononuclear and giant cells is more clearly separated by a layer of fibroblastic cells from the nerve tissue. The changes in the nerve itself are similar, but there is not a great deal of connective tissue hyperplasia. The peripheral portion of the nerve has undergone considerable degeneration, and what axis cylinders are present are swollen and irregular.

*Experiment IV.*

Rabbit (21 days). August 2nd, 1918 (ether anaesthesia): Right sciatic, fine "Japanese gut." Left sciatic, 00 "30-day tanned gut." August 23rd: Rabbit killed. Right sciatic, very little change in the nerve. Left sciatic, a definite lump is present in the nerve at the site of ligature.

*Microscopic Examination.*

*Right Sciatic* (Fig. 6).—The suture is very little absorbed, and is surrounded by a fairly diffuse zone of round-celled and fibroblastic reaction. Close to the suture and running up between the fibres are small cells, most of which have degenerated nuclei. The zone of reaction appears to be chiefly formed by connective tissue elements. A type of cell which is very abundant is a small rounded cell, with a relatively small darkly staining nucleus somewhat eccentrically placed. These appear to be an early stage of fibroblasts. A few giant cells are present, formed of a closely packed bunch of nuclei, with little clear cytoplasm. Between the fibres of connective tissue are many cells with large vesicular nuclei, which are probably cells derived from the neurilemma sheath. The distal part of the nerve shows very considerable degeneration, and there seems to be little tendency of the nerve bundles to sweep round the area of the suture, as in the thread sutures (Rabbit 2).

*Left Sciatic* (Fig. 7).—The suture is scarcely at all absorbed and is observed lying in its place surrounded by an area of reaction formed as follows:

1. Actually lying in contact with the suture and running up between its planes are numerous degenerated polymorphonuclear leucocytes.
2. Outside this is an area of small and medium sized round cells and fibroblasts, with early formation of connective tissue fibres.
3. Outside this are more fully formed connective tissue fibres enclosing in their meshes numerous cells with large vesicular nuclei. This zone separates the suture area from the nerve bundles which run into and are lost in this zone.

No giant cells are seen. The zone of reaction is only slightly wider on the left side than on the right.

*Experiment V.*

Rabbit (2 days). August 2nd, 1918 (ether anaesthesia): Right sciatic, "20-day chromic gut, No. 00." Left sciatic, "plain iodized gut, No. 00." August 4th, 1918: Rabbit died. Autopsy: wounds clean; slight collapse of right lung and congestion of both.

*Microscopic Examination.*

*Right Sciatic* (Fig. 8).—The suture is seen lying firmly embedded in the nerve trunk, surrounded in one place with a dense zone of degenerated leucocytes. Elsewhere the reaction is less, but in the neighbouring tissues very numerous polymorphonuclear cells, many of them degenerated, have made their appearance. There is a small haemorrhage in one place, and in another place two adjoining bundles of nerve fibres have been constricted by the ligature and show the early changes of nerve degeneration—swelling and fragmentation of the axis cylinder, and breaking up of the myelin without any change of the neurilemma sheath.

*Left Sciatic.*—On this side the suture is surrounded on all sides by a dense mass of small round cells, and the number of polymorphonuclear leucocytes which are present in all the neighbouring tissues is much greater than on the right side, otherwise the appearances are identical.

As this operation was carried out with the same aseptic precautions as the others, and in view of the constant absence of sepsis in them, it seems likely that the zone of degenerated polymorphonuclear cells is due to the irritating action of the chemicals used in the preparation of the sutures, and is comparable to the layer of degenerated polymorphonuclear cells seen close to sutures of the same nature in other experiments.

*Experiment VI.*

Rabbit (25 days). August 9th, 1918 (ether anaesthesia): Right sciatic, 20-day chromic gut, No. 0. Left sciatic, plain iodized catgut, No. 00. September 3rd, 1918: Rabbit killed. On the right side there is a very slight degree of fibrosis of the whole thickness of the nerve at the site of the lesion. Considerable paralysis and wasting of muscles below it, with trophic sore on heel. On the left side slight neuroma on a branch of the sciatic only. Main nerve healthy.

*Microscopic Examination.*

*Right Sciatic* (Fig. 9).—The suture is completely absorbed, but its position is evidenced by a circle of densely packed small round cells. Around this are very numerous fairly small giant cells, with clear or granular yellowish-pink cytoplasm and a few peripherally placed nuclei, and with these fairly numerous

FIG. 1.—Rabbit 1, R. (20 day chromic gut; 21 days). To left, inner zone of polymorphonuclear and macrophage cells surrounding fragments of catgut; outer zone of fibroblasts and epithelioid cells, with a few giant cells. (Drawn under camera lucida with Zeiss obj. 4 mm., oc. No. 4 compens.)

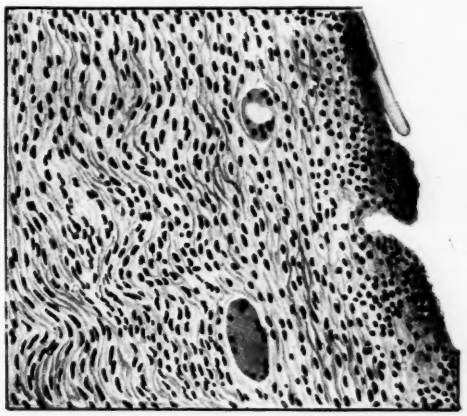


FIG. 3.—Rabbit 2, R. (Waxed linen thread; 21 days.) There is a thin zone of fibroblastic reaction next to the suture, but most of the reaction is from the sheath cells. Note two giant cells, one of which contains a vacuole. All the sutures except a few filaments, which are attached to the edge, have fallen out of the section. (Drawn with camera lucida with Zeiss No. 4 compens. ocular, 4 mm. obj.)

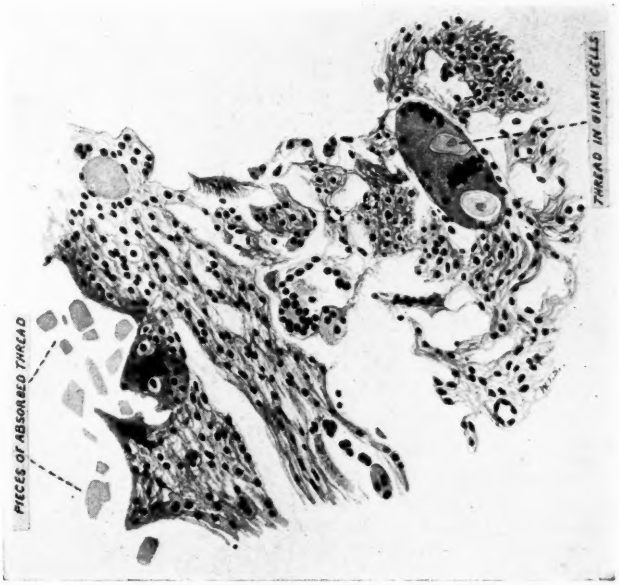



FIG. 2.—Rabbit 1, L. (Linen thread; 21 days.) The reaction is chiefly on the part of the sheath cells. Note the numerous giant cells and the complete absence of small round-celled infiltration. (Drawn with camera lucida with Zeiss 4 mm. obj., No. 4 compens. ocular.)

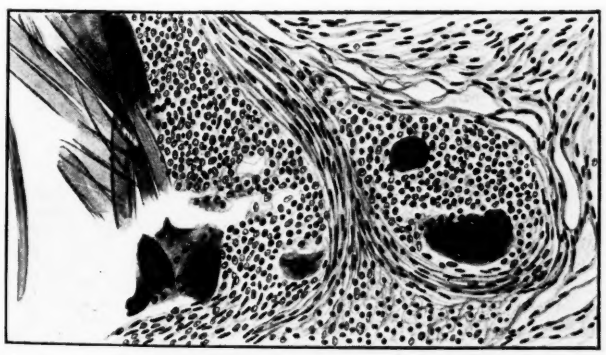


FIG. 4.—Rabbit 3, R. (No. 00 Japanese silk; 21 days.) Reaction mainly from sheath cells. Many giant cells are present, some at a distance from the suture. (Drawn under camera lucida with Zeiss 4 mm. obj., No. 4 compens. ocular.)

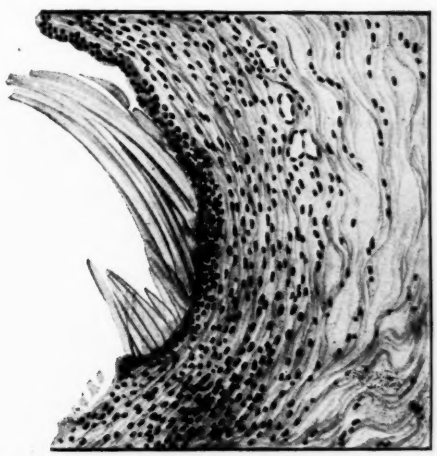


FIG. 5.—Rabbit 3, L. (Japanese silk (waxed); 21 days.) Zone of fibroblastic reaction, which is fairly vascular. A few giant cells are present, but are not shown in this field. (Drawn under camera lucida with Zeiss 4 mm. obj., No. 4 compens. ocular.)

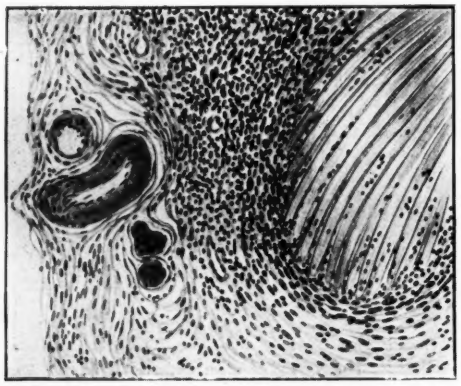


FIG. 6.—Rabbit 4, R. (Japanese silkworm gut; 21 days.) The reaction is fairly extensive. It is partly from the sheath cells and partly fibroblastic. The suture is incompletely absorbed. (Drawn with camera lucida with Zeiss 4 mm. obj., No. 4 compens. ocular.)

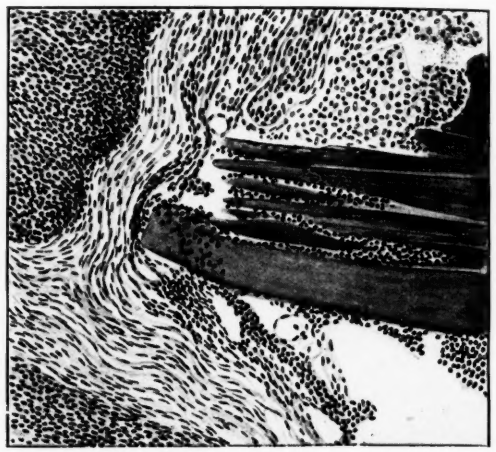


FIG. 7.—Rabbit 4, L. (30 day tanned gut, No. 00.) Fairly intense fibroblastic reaction as well as sheath cell reaction. Polymorphonuclear leucocytes are present running between the planes of the catgut. (Drawn under camera lucida with Zeiss 4 mm. obj., No. 4 compens. ocular.)

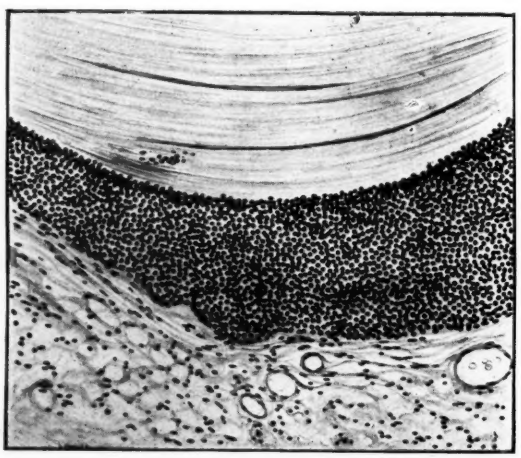


FIG. 8.—Rabbit 5, R. (Second day after suture with chromic gut.) Early reaction of small round cells around suture, due to chemical irritation. (Drawn by camera lucida with Zeiss 4 mm. obj., No. 4 compens. ocular.)

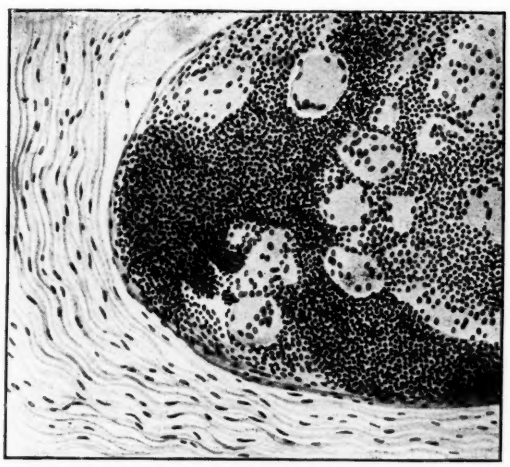


FIG. 9.—Rabbit 6, R. (20 day chromic gut; 25 days.) Position of suture shown by an area of densely packed small round cells, among which are many giant cells. To the left are seen many fibroblasts, and young connective tissue. (Drawn under camera lucida with Zeiss 4 mm. obj., No. 4 compens. ocular.)

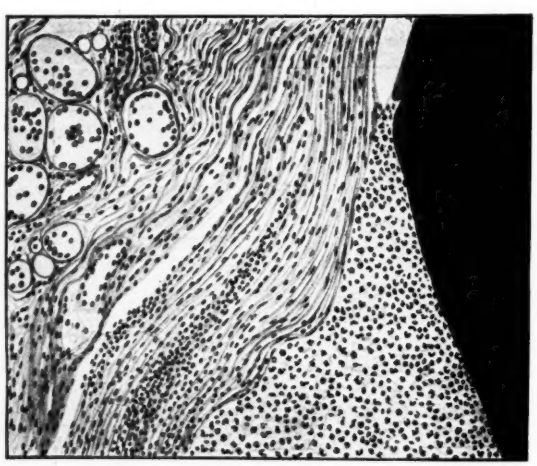


FIG. 10.—Rabbit 6, L. (25 days; plain iodized gut.) Ligature separated by a zone of polymorphonuclear leucocytes from an area of newly formed tissue in which both connective tissue and neurilemma elements are represented. Numerous giant cells are present. (Drawn under camera lucida with 6 mm. obj., No. 4. compens. ocular.)

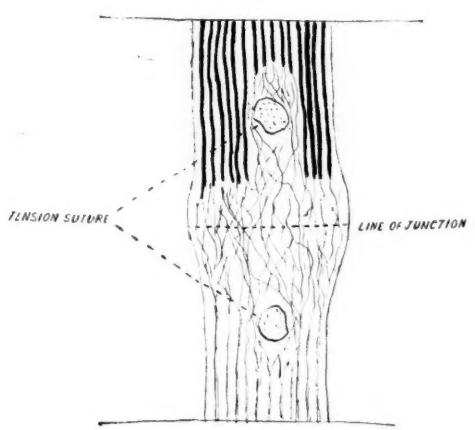



FIG. 11.—Diagrammatic sketch of the regeneration of a nerve whose ends are approximated by a tension suture.

G. E. RENNIE AND O. LATHAM: COMBINED SCLEROSIS WITH HETEROTOPIA OF THE CORD.

## PLATE I.

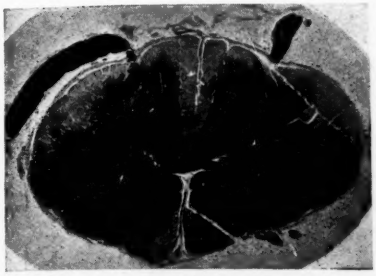


FIG. 1.—Near "*a*" in Plate II; cervical.

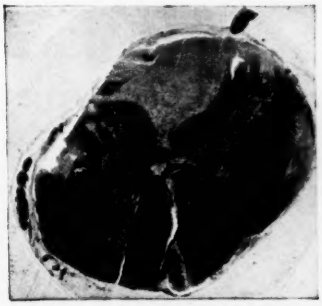


FIG. 2.—Near "*c*"; mid-dorsal.

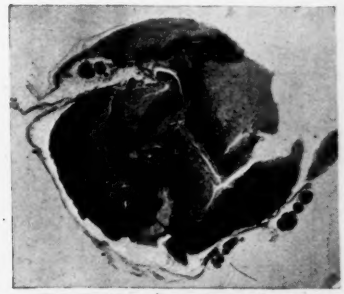


FIG. 3.—Near "*e*"; lower dorsal.

FIG. 4.—Near "*f*" or "*g*"; lumbar.

FIG. 5.—Near "*b*" or "*e*."

FIG. 6.—Near "*b*" and "*c*"; between them.

## PLATE II.

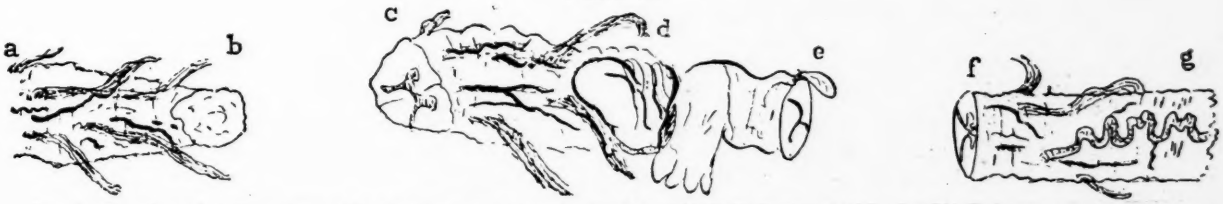



FIG. 1.—Drawing of cord, natural size, showing levels examined and position of abnormalities. *a*, Middle cervical. *b*, Lower cervical. *c*, Upper middle dorsal. *d*, Area apparently injured. *e*, Lower dorsal with heterotopia. *f* and *g*, Upper and lower lumbar.

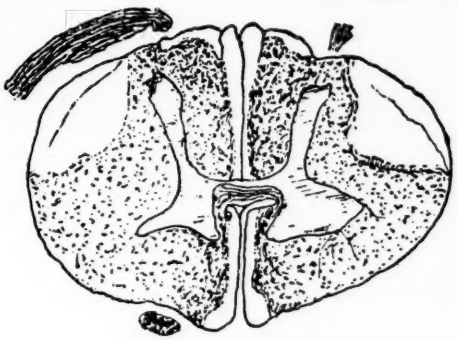


FIG. 3.—Upper cervical.

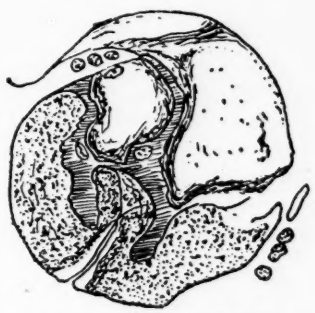


FIG. 4.—At "*e*," lower dorsal.

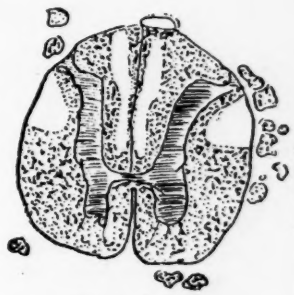


FIG. 5.—Lumbar.

FIG. 2.—Between "*b*" and "*c*," Fig. 1.

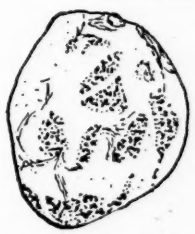


FIG. 6.—Near "*b*."

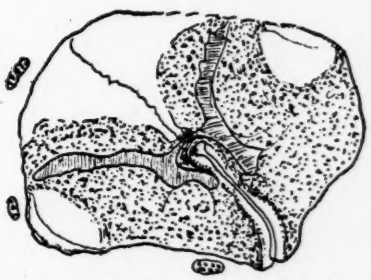
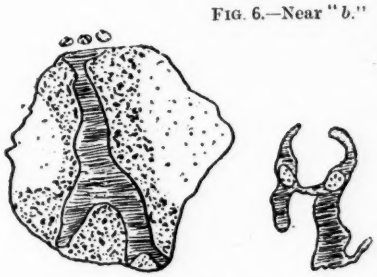
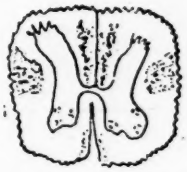


FIG. 10.—Middle upper dorsal, at "*c*."

FIG. 7.—Near "*b*" or *e*."



FIGS. 8 and 9.—Near "*e*."



FIGS. 11 and 12.—Busch-Marchi preparations of the lumbar and cervical levels.

J. GRANT ANDREW: DIAPHRAGMATIC HERNIA OF THE ENTIRE STOMACH AND GREAT OMENTUM.

FIG. A.

FIG. B.

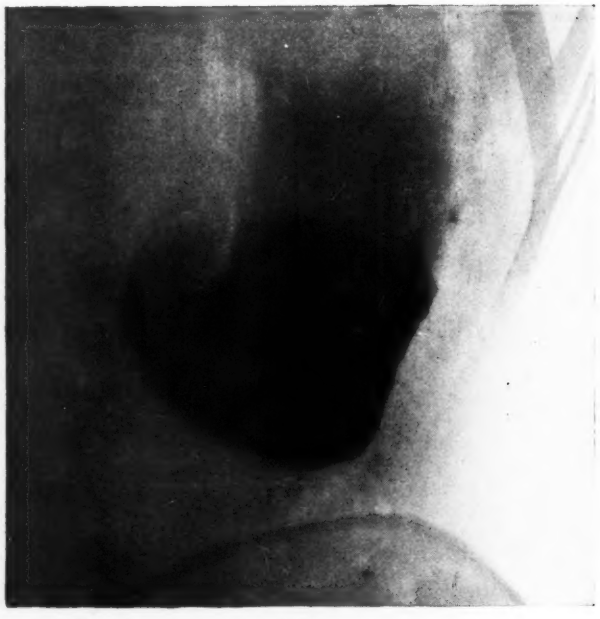
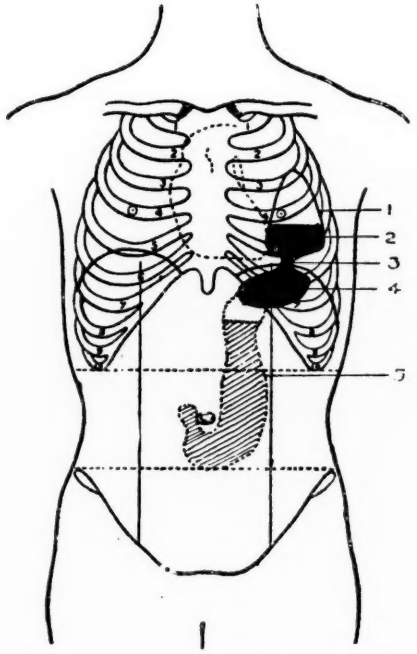


FIG. C.




1, Cardiac end of the stomach filled with air. 2, Upper level of the opaque meal. 3, Diaphragm. 4, Pyloric end of the stomach still in the abdomen. 5, Position of the normal stomach.

small fibroblastic cells and young connective tissue fibres. This area is marked off from the nerve bundles by a definite zone of well-formed fibrous tissue.

*Left Sciatic* (Fig. 10).—The suture is almost completely absorbed. Next to it and in the first few layers are numerous polymorphonuclear cells, but the majority of the reaction is undertaken by large ovoid cells with pale-staining nuclei, probably derived from the neurilemma sheath, and a few fibroblastic cells. The formation of fibrous tissue is only moderate in amount. One or two large giant cells with a ring of peripherally placed nuclei are seen in the outer part of the reaction in the fibrous tissue zone, and similar cells in various stages of disintegration can be seen making their way along the lymphatic channels. Some of these giant cells contain red blood corpuscles in their cytoplasm.

*Experiment VII.*

Rabbit (81 days). September 23rd, 1918 (ether anaesthesia): Right sciatic, plain sterilized catgut, No. 0. Left sciatic, 30-day chromic gut, No. 00. Rabbit killed, November 12th, 1918. In both nerves the bulb of reaction is small, and in the right almost imperceptible.

*Microscopic Examination.*

*Right Sciatic.*—The suture has been entirely absorbed and no trace remains except a neuroma in the nerve, and a few degenerated giant cells in process of disintegration. There is increased fibrosis at the site of the suture but no sign of small round cells, etc. Some of the nerve bundles of the peripheral part of the nerve show complete absence of axis cylinders and myelin, and increase in the number of the neurilemma sheath cells as well as of the fibrous tissue elements.

*Left Sciatic.*—The suture is only partially absorbed, and is surrounded by a very extensive zone formed internally of polymorphonuclear and small mononuclear cells, packed very closely together, along with a considerable admixture of fibroblastic cells. This zone, which is of an intense blue colour, runs out into the tissues for some distance, passing along lines of least resistance—for example, between nerve bundles. This zone gradually passes, when followed outwards, into a more purely fibroblastic zone, and in some places there is fairly fully-formed connective tissue. The neighbouring muscles and nerves are involved in this fibroblastic reaction.

*Experiment VIII.*

Rabbit (67 days). September 6th, 1918 (ether anaesthesia): Right sciatic, fine "Japanese gut." Left sciatic, Stiles's fine linen thread, waxed, No. 160. November 12th, 1918: Rabbit killed. The right sciatic showed a definite thickening at the site of the suture. The left showed very little abnormality.

*Microscopic Examination.*

*Right Sciatic.*—There is no trace of the suture except in an area of fibrosis and cellular increase with neuroma formation in the neighbouring nerves.

*Left Sciatic.*—The suture is almost completely unabsorbed and the reaction around it corresponds in almost every particular to that in Rabbit 2. Internally is a zone of cells derived from the neurilemma sheath with only a small admixture of fibrous tissue cells. Outside this is a zone characterized by large clear giant cells, some showing vacuoles, and more definite fibrous tissue. Everywhere there is a complete absence of small round cells, and very little degeneration even of the innermost layer of cells. The peripheral segment of the nerve shows fairly complete degeneration.

*Experiment IX.*

Rabbit (52 days). September 10th, 1918 (ether anaesthesia): Right sciatic, Japanese silk, No. 00. Left sciatic, 30-day chromic gut, No. 00. November 1st, 1918: Rabbit killed. Right sciatic showed very slight change, only very slight increase of hardness at one point. Left sciatic showed a definite hard thickening, and was slightly adherent to surrounding tissues.

*Microscopic Examination.*

*Right Sciatic.*—The suture is almost completely absorbed, its site being evidenced by an oval collection of small round cells, and large giant cells with a few pale nuclei which are digesting the remaining fragments of silk. Some degenerated cells are also present in one part of the area where the fragments of silk are more numerous. Around this zone is a ring of fibrous tissue, the lymph spaces between the fibres of which are packed with small round cells. The peripheral part of the nerve shows very considerable degeneration, droplets of fat being still present in large quantities, but many axis cylinders remain.

*Left Sciatic.*—The suture is almost completely absorbed. Its place is filled with an area of fibrous tissue and fibroblastic cells, with collections in one or two places of small round cells, packed closely together. In the fibrous tissue area there are still a number of degenerate polymorphonuclear cells. The nerve bundle which passes beside it, and the edge of which is involved in the reaction, shows very little degeneration in its peripheral segment.

## Discussion of Experiments.

It is clear from the histological appearances that there are two main types of tissue reaction in nerves, both of which are present to some degree in every case.

1. *Mesoblastic Cells.*—The early reaction is on the part of the mesoblastic cells. The circulating lymphocytes and hyaline cells—and, in the case of the more irritating suture materials, the polymorphonuclear leucocytes also—take a part in the reaction from its earliest stages. Very soon after there is a proliferation of the endothelial and fibroblastic cells. Both these reactions vary in amount according to the nature of the suture material, and seem to be specially abundant when the catgut employed has been prepared with chromic acid. They are very slight with plain linen thread and silk; but, when these materials have been waxed with Horsley's bone-wax, a narrow zone of mesoblastic reaction appears.

2. *Cells of the Neurilemma Sheath.*—The other form of reaction, that of the cells of the neurilemma sheath, comes on at a later date. It is probably inevitable, and due as much to the damage inflicted on the nerve as to the presence of a foreign body; but no doubt the suture stimulates the neuroma formation as well as leading to the appearance of the large giant cells which seem to arise from the cells of the neurilemma sheath. Such giant cells, with inclusions of suture material, were commonly found at some distance from the suture, and in some cases were seen filling the lymphatic spaces of the surrounding tissue. They thus appear to have some migratory powers, and their similarity in appearance and origin to the amoeboid giant cells of glial reaction in the central nervous system lends some support to this hypothesis. They seem to take a large part in the ultimate removal of the less easily absorbed suture materials.

Although the formation of a neuroma at the site of the suture is unavoidable whatever the material used, so long as any damage is done to nerve fibres, it will be of only limited extent if fibroblastic reaction is avoided; and it will be healthy neuroma tissue in the sense of being able to transmit useful functioning nerve fibres, if no lasting source of irritation is left—that is, if the suture is either completely or almost completely absorbed within a few weeks.

*Comparison of the Suture Materials Used.*

The *naked-eye appearances* of the nerves, when they were examined on removal from the body, gave evidence which very often conflicted with the microscopic appearances. But in some cases the evidence thus obtained was of value, especially when no abnormality or only a slight diffuse thickening of the nerve was seen.

This was the case with linen thread, unwaxed silk, and the material described as "Japanese silkworm gut." Where catgut was used in any form there was always a definite thickening of the nerve, least with plain sterilized gut, and most with chromic gut. Chromic gut (thirty-day) appeared macroscopically to be quite unabsorbed at the end of twenty-one days; after fifty-two days there was a definite hard thickening, adherent to surrounding tissues, and even after eighty days some thickening of the nerve remained.

*Cell Reaction and Absorbability.*

From the microscopic appearances it was possible to judge both the amount of fibroblastic reaction and the absorbability of the suture. The materials which caused least fibroblastic reaction were plain linen thread and silk, both of which, when waxed with Horsley's bone-wax, gave rise to more small-celled infiltration than when used plain. Of these two materials silk was the more readily absorbed, but this absorption was incomplete at the end of fifty-two days. With linen thread there was only a very partial absorption in the same period.

Next in point of reaction was "Japanese silkworm gut"; it gave rise to a slight but definite fibroblastic reaction, which settled down into a connective tissue scar at the end of sixty-seven days, when the ligature was completely absorbed. This material seems to be rather more readily absorbed than silk, but definitely more irritating.

Of the forms of catgut used, thirty-day chromic gut seemed relatively unabsorbable under the conditions of the experiment; on the other hand, twenty-day chromic gut was completely absorbed in twenty-one days. Iodized gut was almost completely absorbed in the same period. "Tanned gut" was quite unabsorbed. Both "twenty-day chromic gut" and "plain iodized gut" gave rise to a moderate amount of fibroblastic reaction only.

The disadvantages of any suture material are exaggerated when passed through the whole thickness of a

nerve in the form of a "tension suture." This will tend to produce an intraneural neuroma at a greater distance from the suture line both above and below; and an additional obstacle is placed in the pathway of the regenerating axons, more particularly when the suture material is one which causes much fibroblastic reaction. This is diagrammatically represented in Fig. 11.

### Conclusions.

(1) While plain thread or silk sutures give rise to no irritation, they are relatively unabsorbable.

(2) "Plain sterilized" or "plain iodized gut" are of value by reason of their rapid absorbability, but their low degree of tensile strength and their slightly irritating nature counteract these advantages.

(3) "Japanese silkworm gut" has great tensile strength, and in rate of absorbability and the reaction which it causes holds a place midway between groups (1) and (2).

(4) Chemical antiseptics should be avoided in all suture materials.

In conclusion, we desire to express our gratitude to the Medical Research Committee, whose generosity in equipping and supporting the Research Laboratory have made this work possible, and to Lieut.-Colonel D. K. McDowell, C.M.G., whose interest and goodwill have greatly helped our endeavours to combine some research work with the routine duties of a busy hospital.

## COMBINED SCLEROSIS WITH HETEROTOPIA OF THE SPINAL CORD.

BY

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[*With Special Plate.*]

The following case, in which the diagnosis of disseminated sclerosis of the spinal type was made during life, presents many points of interest, especially in connexion with the existence of the congenital or developmental defect observed *post mortem*.

M. R., a married woman, was admitted to the Royal Prince Alfred Hospital under my care on April 29th, 1918, complaining of weakness of the legs and some numbness of the feet for about a year. There was nothing of note in her family history.

### History.

She had always worked hard indoors; had been married seven years and had had two healthy children; no miscarriages or stillborn children. There was no history of alcoholism or of venereal disease.

She had had an attack of colitis two years previously, and had not felt well since then. One year ago she began to notice that her legs were getting weak and stiff at the joints; they always felt tired, but she had no pain in them. About the same time she noticed numbness in the soles of the feet. These symptoms became aggravated gradually until she completely lost all power of walking about one month before being admitted to hospital. For some weeks previous she had suffered much from indigestion and constipation, but there was no disturbance of the sphincters.

### Condition on Admission.

She was thin but had a good colour. She had no pain or discomfort, and although unable to stand or walk she was quite cheerful, and expressed confidence in her ultimate recovery. The temperature was normal, pulse 116, respirations 24. Urine acid, specific gravity 1020, contained no albumin, sugar, or pus. She was intelligent, had a good memory, was not emotional, and slept well. Nothing abnormal was detected on examination of the cranium or spine. The cranial nerves were all normal. There was no weakness or stiffness in the arms, but all movements of the legs were impaired by marked spasticity, and she was quite unable to walk or stand, even with assistance. The only disturbance of sensation detected was some slight diminution in acuity of tactile sensation on the outer side of both thighs, and some hyperaesthesia on the soles of the feet. Wrist and elbow jerks were present, and equal on both sides but not exaggerated. Both knee-jerks were much exaggerated, and patella and ankle clonus were easily elicited on both sides. There was no disturbance of the sphincters and no trophic changes.

Examination of the blood showed the following result: Red cells, 3,336,000; leucocytes, 4,000; haemoglobin value, 44 per cent.; colour index, 0.65. Differential count of leucocytes: Neutrophile polymorphs, 73 per cent.; small lymphocytes, 18 per cent.; large and transitionals, 8 per cent.; eosinophils, 1 per cent.

Nothing abnormal was detected on examination of the heart, lungs, and abdomen. Lumbar puncture was performed on April 30th, and 35 c.cm. of clear fluid was obtained under pressure. This fluid was found to contain no cellular deposit, and the "Wassermann" reaction with the fluid undiluted and in dilutions of 1 in 2 and 1 in 5 was in each case negative. On the other hand, the "Wassermann" reaction with the blood was positive on the two occasions on which it was tested.

The patient thus presented the clinical picture of "paraplegia in extension," and there was nothing to indicate any immediate unfavourable change in her condition.

### After-History: Death.

On the night of May 3rd the patient suddenly became delirious and noisy, but could collect herself sufficiently to answer questions. She said she was very frightened, but could give no reason for being frightened. This state lasted for about an hour; but later in the evening she again became noisy, and passed through a similar but more severe and prolonged attack.

Next day she was strange in her manner and had delusions about the other patients; she was afraid of being sent away to a mental hospital. On May 5th she was very drowsy and objected to take any medicine. It was now noted that the extensor muscles were relaxed, that she preferred to lie with her legs flexed, and that they were spastic.

On May 8th it was noted that she had well-marked nystagmus and some weakness of the left external rectus muscle of the eye, but no other alteration in the cranial nerves could be detected. The bladder became distended and 30 oz. of urine had to be drawn off by catheter. The urine was clear and contained no albumin, sugar, blood, or pus. She also developed incontinence of the rectal sphincter.

On May 10th it was reported that she had had a quiet night and had passed urine voluntarily at midnight, the urine again being quite normal. At 6 a.m. she became unconscious, the bladder was distended and 32 oz. of urine drawn off by catheter contained a large amount of blood. She died the same day without recovering consciousness and with no material change in her condition except a sudden rise of temperature to 103° and pulse 166.

### Pathological Report by Dr. Latham.

The spinal cord was examined at the Pathological Laboratory of the Lunacy Department of the New South Wales Government.

#### A. *Macroscopical.*

The material was received in 10 per cent. formalin, and on naked-eye examination, after dividing the dura mater longitudinally along the ventral surface, there was noted, besides conspicuous tortuous blood vessels, several alterations in the size and appearance of the cord at various levels.

For instance, between the middle and lower cervical regions a constriction appeared, so that the transverse diameter was quickly reduced from 12 to 9 mm., the vertical dimensions remaining the same; the cord again widened until the transverse measured 16 mm. (just above "*c*" in Fig. 1, Plate II). The constriction was really of greater degree, as may be seen in Fig. 2—a longitudinal section of the part.

About the seventh dorsal the cord had the appearance of having being nipped by a forceps at its removal, and a little lower down there appeared to be a condition of "heterotopia" around one of the posterior horns. As, however, the whole condition much resembled that obtaining in two cords recently described by one of us,[1] and considered to be due to congenital abnormalities, the parts were carefully embedded in celloidin, it having being ascertained that the tissue was exceedingly brittle and fragile. The upper cervical and all the lumbar and sacral regions appeared normal.

#### B. *Microscopical.*

The following staining methods were employed: (1) For myelin sheaths, Robertson's Heller's method after mordanting in Weigert's fluids; for degenerating myelin, Busch's modification of Marchi's method; for nerve cells, round-cell infiltration and organisms, Nissl's stain; for neuroglia, a modified van Gieson, using azofuchsin G; and for vascular conditions haematoxylin and eosin. Sections were made from the upper and lower lumbar, lower and middle dorsal, and cervical levels. The myelin stain at once revealed a system degeneration involving bilaterally Goll's and part of Burdach's fasciculi, the crossed and direct pyramidals (and probably part of the vestibulo-spinal and the rubro-spinal too), as well as the direct cerebellar tracts—that is, corresponding to the pathological entity known as Gowers's ataxic paraplegia. There was no evidence of any such lesion above or below these constrictions such as would suggest that these latter had produced a transverse myelitis. It was also easily apparent that the posterior and anterior spinal nerve roots and the root zones were intact. The pia arachnoid was normal; some large round cells with small nuclei chiefly over those parts of the cord which were sclerosed were by Busch's method shown to be compound granular cells, and could be traced right into the cord along the adventitial lymph spaces of the emerging blood vessels, and to be loaded with myelin; in the ventral fissure a few

small round cells were noted, but no general small round-cell infiltration of the pia arachnoid and adventitial sheaths of the blood vessels obtained, such as forms the typical picture of tabes. No pus cells were seen anywhere. Endarteritis obliterans was not observed, but the smallest blood vessels of the cord exhibited arterio-capillary fibrosis, which narrowed the lumen and thickened the outer coats. In the sclerosed parts the blood vessels were engorged and their lymph channels filled with compound granular cells. Occasionally numerous capillary haemorrhages were noted, and some of the sclerosed areas might well have been areas of softening. In these areas the nerve fibres showed a twisted course, with swollen spiral axis cylinders and dilated thinned ill-staining myelin sheaths, and these conditions, especially near the constrictions, indicated a state of things which must have had gradual onset during life. The Busch-Marchi method did not take very well, but nevertheless showed clearly the many degenerating fibres in the sclerosed areas, but did not show any further extension of the diseased process in these areas or any other ones, in marked contrast to the results we obtained in a case of Friedreich's ataxia in a young child recently described by me,[2] where the ordinary myelin stain showed extensive sclerosis of the posterior columns of long standing, while the Busch-Marchi method revealed a further but quite recent degeneration in the crossed pyramidals, as well as the periphery of the cord, from one posterior horn ventrally right round and including the ventral fissure to the other posterior horn. In the case I now describe the degeneration stopped short and did not involve Gowers's antero-lateral tract nor the more anterior tracts till the inner part of the vestibulo-spinal was reached.

The neuroglial elements were readily seen round the central canal and sclerosed areas, but were brittle, and where there were many haemorrhages were granular or scarcely seen.

The anterior cornual cells stained well and, save for a fair amount of pigment, must be accounted normal; Clark's column cells similarly were functional, but were somewhat obscured by a rather abnormal development of tangle skeins of fine medullated fibres which were found just here.

*Appearance Noted at the Different Levels, Heller-Pal Stain.*

*The mid-cervical* shows the tract of Goll sclerosed right to the commissure as well as the posterior edge of Burdach's; also the cortico-spinal, rubro-spinal, vestibulo-spinal, and cortico-spinal ventralis.

*The lower cervical* shows the first constriction. No regular tracts nor grey matter can be made out, but numerous dilated myelin sheaths and capillary haemorrhages. In tangential section it may be seen in Plate II, Fig. 2, at "B[1]."

*The upper and middle dorsal* levels show the greatest involvement of the posterior fasciculi with many capillary haemorrhages in the cortico-spinal tracts and near one posterior horn the commencement of that heterotopia which is such a marked feature of the next section.

*Lower Dorsal.*—The tracts posterior to the commissure are altogether disturbed by a peculiar displacement of apparently one cortico-spinal and spino-cerebellar tract which form a cap over the posterior spinal nerve roots. The other side of the cord is also affected and the anterior horns quite dissimilar (Fig. 9, Plate II). Clark's column cells are here well marked. Other sections near this level show even greater abnormalities (best understood by examining the accompanying diagrams).

*The lumbar regions* simply reveal system degenerations involving the fasciculi of Goll (leaving the septal area free), and the cortico-spinal tracts.

It must be mentioned that where the abnormalities are most marked was found most evidences of haemorrhages, degenerative myelitis, and a sweeping bare of all but a few belated twisted swollen myelinated fibres associated with an absence of neuroglial framework.

In Fig. 11 and Fig. 12, Plate II, Busch-Marchi preparations of the lumbar and cervical levels show that although the sclerosed areas come out nearly bare of myelin fibres when examined after Pal's stain yet many of the fibres have only recently degenerated, and can still take on a Marchi reaction, although only poorly. From the greater number of affected fibres in the cortico-spinal tracts one might suggest these were last affected.

## *The Possible Etiology as Revealed by the Pathological Findings.*

We have a cord showing a combined sclerosis of moderately recent causation. The complete absence of damage or any pathological condition in the posterior nerve roots seems to rule out a lymphogenous affection reaching the cord by the lymph system carrying toxins towards the cord.[3]

These reasons, together with the absence of small round cell infiltration of the pia arachnoid and non-involvement of the root zone, quite rule out tabes. The absence of any foci of pus cells or inflammatory reaction effectually dismisses the commoner infective conditions. No blood vessels were noted showing specific signs of syphilis, although many hold lues to be a common auxiliary in the etiology of fibro-hyaline degeneration of the short vessels of the first layer of the cortex. No part of the affected area resembled a gumma. Many of the fibres affected came from cells in Clark's column which gave rise to those fibres—that is to say, only part of the neurone was affected, and that part the long intraspinal axon chiefly supplied by small arteries coming from the posterior and lateral pial blood vessels.

It would appear, then, that inasmuch as the condition was bilateral there was rather a blood condition, a deficiency rather than an irritative toxin, whereby we got a slow decaying rather than an inflammatory reaction of the myelin fibres as well as of the neuroglial framework, as evidenced by the brittleness of the sections, and the granular appearance and poor staining of the glia in certain areas. This would appear to support the contention of Marie Williamson[4] and Campbell[5] that these conditions are due to some generalized blood condition which specially affects those tracts where the blood supply is likely to be relatively indifferent. In this connexion, however, it is difficult to account for the escape of Gowers's tract among others when the ventral cortico-spinal tracts were so badly affected.

In view of the *post-mortem* findings in the spinal cord, it is interesting to note that the patient's life could be divided into four periods: (1) A period of good health and activity with no evidence of any weakness or defect which could be ascribed to the heterotopia of the spinal cord. As this must have been a congenital condition we must conclude that it was in no way connected with the nervous symptoms subsequently manifested by the patient. (2) An attack of colitis, the cause of which was unknown, and after which she never recovered her usual health and strength. (3) The period of gradual onset of weakness in the legs and numbness in the feet, which progressed in the course of twelve months to complete paraplegia without any sphincter disturbance or any mental change. (4) The last period of life, extending over the last few days of life, in which there was the most marked change in her mental state—a condition of noisy delirium with obsessions and delusions being followed shortly by coma and death. There was also during this period a loss of sphincter control, and a change in type of the paraplegia from "paraplegia in extension" to "paraplegia in flexion," and the beginning of trophic changes—for I take it that the blood in the urine and the haemorrhagic condition of the bladder mucous membrane are to be regarded as evidence of a trophic change in the bladder—with sudden rise of temperature and death.

As has been said, the diagnosis made during life was disseminated sclerosis of the spinal type, and it was suggested that the cerebral symptoms manifested during the last few days of life were due to an extension of the same morbid process to the brain. A careful macroscopic examination of all parts of the brain failed to reveal any lesion either of a meningitic or parenchymatous character, and we can only conclude that these symptoms must have been due to some acute toxic process.

There was absolutely no history of any ataxy during any period of the disease; from the first and continuously onwards the only symptom was weakness and stiffness of the joints. Nor was there, on examination of the patient, any obvious disturbance of sensation or of the sphincters. In fact, clinically the case was one of pure "paraplegia in extension," which only changed in type during the last two or three days of life.

In the light of these facts it is difficult to correlate the clinical symptoms with the *post-mortem* findings. One would have expected to have had more definite symptoms due to the involvement of the posterior columns, but the more acute onset of the sphincter disturbance and the trophic (?) changes in the bladder, the relaxation of the spasticity of the extensor muscles, and the acute mental disturbance were probably due to the acute changes in the cord, that is, the haemorrhages and the more recent degeneration of the myelin which were most obvious in those parts of the cord which were the site of the heterotopia. And although the heterotopia must have been of congenital or developmental origin and apparently caused no symptoms until the onset of the signs of systemic degeneration, it is difficult to avoid the conclusion that in some way or other it was responsible—as a *locus resistentiae minoris*—for the more acute histological changes in the cord which manifested themselves in the change of

symptoms during the last period of life, and probably accelerated the patient's death.

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## DIAPHRAGMATIC HERNIA OF THE ENTIRE STOMACH AND GREAT OMENTUM.

BY

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*[With Special Plate.]*

As this case is unique in respect that *x*-ray photographs are shown of the entire stomach in the left pleural cavity and after operation in the normal situation, it was thought worthy of publication. The history of the case is also interesting, showing the amount of unnecessary hardship inflicted upon a long-suffering and patient soldier by a failure to recognize the great diagnostic value of *x* ray examination.

M. B., a rifleman, aged 22, was shot by a sniper about 7 p.m. on March 12th, 1917, while occupying a captured German trench. The bullet entered the left side of the chest behind and immediately below the twelfth rib, 2½ in. from the middle line, and was extracted from under the skin on the following day at a point 2 in. below and 1 in. to the inner side of the left nipple line, a through-and-through wound. The bullet, as frequently happens, had turned round and was pointing base uppermost. No anaesthetic was given for its removal. Milk alone was given by the mouth at the casualty clearing station and was retained. From the casualty clearing station he was removed to a base hospital in Rouen, arriving in England on April 17th, 1917. Several months were passed in a general hospital and convalescent home before he was considered fit to return to his regimental dépôt, which he did about the middle of July. He complained at his dépôt that he suffered much pain after food of any description and that he was frequently sick. His statements were disregarded and he was given "medicine and duty." In spite of his complaints he was sent back to France on July 27th, that is, four months after receiving his wound. Every day while in France he suffered pain, and was totally unable to digest the ordinary army ration. He was told that he was "swinging the lead," and received little or no sympathy. He stuck it until he could stand it no longer, and he was carried down from the line too weak to go as a sitting case. He returned from France on December 28th, 1917, sent home as a case of gastritis. That label has been his undoing. He arrived at an auxiliary hospital in Scotland on December 31st, 1917. For seven or eight weeks he received treatment for gastritis, after which he spent thirteen weeks in a convalescent home, but without any improvement. A visiting medical officer to the convalescent home marked him as fit for discharge from the service, and for this purpose he was sent back to the hospital to which he had been sent on his return from France. Instead of giving him his discharge a medical board at this hospital gave him ten days' leave and marked him "duty." On the second day of his leave he reported sick, and was immediately admitted to the medical wards of the "mother hospital." Here also for weeks he was treated for gastritis, and was given medicine and milk diet. He was ultimately, on July 25th, 1918, fifteen months after being wounded, discharged from the service as a case of gastritis.

Not being one whit better, he consulted the local Pensions Committee; they sent him to a hospital for pensioners, and there he received the same line of treatment on the medical side of the house. After six weeks' residence in this hospital he was, to use his own term, "fed up," and he intentionally overstayed his leave, and was in consequence dismissed from the hospital.

On again consulting the local Pensions Committee he passed into my care on February 19th, 1919, for the first time under the charge of a surgeon, and that was by inadvertence. On admission it was noted that his general condition was unsatisfactory. Examination revealed the existence of the scars in the left lower chest wall as before noted. The heart was slightly displaced towards the right, and was irregular in rhythm. The base of the left lung was dull to percussion, and the respiratory murmur was absent in the lower half of this lung, while râles were heard in the upper half in the greater part of the right lung.

His constant complaint, however, was that of pain immediately after or very shortly after food of any description, and a feeling of great distension. From the situation of the through-and-through wound, my opinion at this stage was that the condition might be one of hour-glass contraction of the stomach following perforation by the bullet.

The case was clearly one for examination by bismuth, and he was sent for a radiographic report. The entire stomach, as shown in the accompanying photographs taken by Major James R. Riddell, appeared to be above the diaphragm and in the left pleural cavity. Though his general condition was not good, if relief was to be obtained at all operation was an imperative necessity.

On March 25th, 1919, assisted by Captain Rimer, U.S., A.M.S., and by Captain James Maclean, R.A.M.C.(T.), as anaesthetist, the abdomen was opened by a transverse incision through the left rectus muscle. The transverse colon immediately presented itself. No stomach was visible. An additional vertical incision was necessary to get under the diaphragm. It was then seen by tracing up the bowel from the duodenum that the entire stomach and great omentum, as indicated in the *x*-ray picture, had disappeared and were on the other side of the diaphragm, the opening in the diaphragm being in the neighbourhood of and indistinguishable from that through which the oesophagus enters the abdomen. With considerable difficulty the stomach was drawn back into the abdomen. The omentum had contracted adhesion to everything it came into contact with, and probably to the under surface of the lung. Any attempt at traction caused haemorrhage, and a portion of the omentum so adherent that it was dangerous to remove was left in the pleural cavity. The opening in the diaphragm was closed by strong interrupted silk sutures. The stomach appeared thickened as if the wall had hypertrophied in the vain effort to pass the food on to the duodenum, but what was still more striking was the absence so far as one could see of any perforation or track of perforation by the bullet.

His recovery was naturally slow, but was not complicated in any way. The wounds healed primarily. When last seen by me, on May 20th, he stated that he was now completely free from sickness and from pain when food was taken. He was taking ordinary diet. The heart was normal in position and in rhythm. There is still some comparative dullness at the base of the left lung with diminished respiratory murmur, vocal fremitus, and vocal resonance.

Since the commencement of the war in 1914 several cases of a similar nature have been put on record, but no case, so far as I have been able to find out, has been published showing by *x* ray the herniated stomach. In the BRITISH MEDICAL JOURNAL of April 19th, 1919, Sir James Barr, in writing on chest conditions, referred to a case of diaphragmatic hernia of the stomach successfully operated on by Captain Arthur J. Evans. Captain Evans has not yet published his case, but he kindly sent me a copy of the medical case sheet. The similarity of his case to mine is very striking, both in regard to history and the condition found on operation. Almost a year elapsed—eleven months—in Captain Evans's case before operation. Captain Evans writes: "The most interesting point about the case is how the patient ever managed to survive the most extraordinary trials he must have gone through before it was recognized that he was a serious case." Two years elapsed in my case, and the record, to say the least, is not one to be proud of. In both cases the entire stomach and omentum had passed into the left pleural cavity, and in both the difficulty lay in returning the omentum. The following articles may be referred to by those interested in the subject: "Notes on a case of traumatic hernia of the diaphragm proving fatal seven months after wound," by Captain C. P. Symonds, R.A.M.C., *Journal of the R.A.M.C.*, September, 1917; "La hernie

diaphragmatique étranglée consécutive aux plaies de guerre," by L. Bérard and Gh. Dunet, *Lyon chirurg.*, No. 5, xv, 39; "A case of diaphragmatic hernia following gunshot wound: attempt to bring about radical cure by extensive thoracoplasty," by David M. Greig, *Edinburgh Medical Journal*, June, 1919.

The following is the note given me by Major James R. Riddell, R.A.M.C.(T.):

The patient could only take part of the opaque meal and that with great difficulty. Skiascopic examination showed that three-quarters of the stomach was in the thorax. The portion remaining in the abdomen was joined to that above the diaphragm by a narrow passage. Practically all the opaque meal could be made to pass back into the chest cavity by laying the patient for a few seconds on his side and elevating the hips; the tone was poor and peristalsis was not made out. The upper limit of the stomach was about the level of the third rib in front.

In the diagram the dotted line shows the normal position of the stomach alongside the position of the patient's before operation.

Two of the skiagrams, A and B, were taken before and one, C, some weeks after the operation.

# Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

### FOREIGN BODY IN CAECUM SIMULATING APPENDICITIS.

ON August 6th I was requested to visit C. K., aged 35 years, of weak intellect, who was suffering acute abdominal pain, especially in the right iliac fossa. The muscles were very rigid, and I suspected a perforation from a sloughing appendix. The patient was at once removed to the hospital, and, with the assistance of Dr. Cecil Richardson, I opened the abdomen by a para-rectal incision. Considerable trouble was caused by protrusion of small intestine on account of the muscular contraction, which could not be controlled by the anaesthetic. On exploring the caecal region a hard substance was felt which could only be a foreign body. It lay diagonally across the caecum and ascending colon, and had a sharp point which had perforated. The perforation was slightly enlarged and the foreign body extracted, proving to be a wire nail 3 in. long. The bowel was clamped, the perforated spot buried by a purse-string suture, and a reinforcing Lembert suture applied in the horizontal axis. The wound was healed on the tenth day, and there have been no further symptoms. C. K. does not seem inclined to give any information as to how or why he swallowed the nail, but one can hardly believe it was an accident.

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### THE INFECTIVITY OF SYPHILIS.

I VENTURE to suggest that the medical profession is not sufficiently alive to the danger of syphilis being transmitted in innocence and apparently also indirectly from one member of a household to another. During the last two years I have come across three instances of this.

1. A girl, aged 15, used to nurse a syphilitic infant that had been born to a young woman, to whom her mother had given hospitality while her sweetheart was with the colours. The girl got a chancre on her lower eyelid, with enlargement of glands, sore throat, and exanthem. A month or two later her mother showed typical secondary manifestations, with what appeared to be the primary lesion in the perineum, close to the anus. She had no lesion further forward; her husband was away (in France, I believe), and altogether I think it most unlikely that she had been unfaithful.

2. I attended for a miscarriage a woman who showed late secondary signs, and a little while afterwards she gave the disease to her husband in the ordinary way, when he was put on military duty nearer home. Shortly after that one of their family, a boy aged 5 or 6 years, got a primary sore on the outer side of his forearm. About six months later an older boy came up among my out-patients with rash, enlarged glands, etc. (like his younger brother), and a condyloma at the anus.

3. A year ago another family I know had a visitor staying with them (a woman, I fancy) who told them incidentally that she (or he) had been attending at a hospital in a neighbouring city for injections into her blood of sheep's blood, as her (or his) blood was so poor! Presumably this individual had overheard some remarks on the technique of the Wassermann reaction. However this may be, the man of the house got a primary sore in the usual place, though, as I think, innocently and indirectly. He had a course of galyl and mercurial treatment, but failed to present himself again. About a month ago his wife came to see me with a faint scaly eruption, sore throat, and enlarged glands. She gave a positive Wassermann reaction. The husband had been cautioned as soon as seen, and I do not believe he had transgressed. Finally, within a week of the wife's coming to me, their 15-year-old daughter developed a sudden vulvitis. There was swelling and redness of the labia, and a row of three or four tiny non-indurated ulcers, with serous exudation only, and slight enlargement of the inguinal glands. A dose of novarsenobillon and of colloid mercury caused almost complete return to normal in a few days, but no spirochaetes were found.

For myself I cannot resist the conclusion that an infected vessel or w.c. seat has in some at least of these cases transmitted the virus. If this really is the explanation, an unmistakable warning should be given. All public closets ought to have the front and perhaps also the back part of the seat cut away, and every man, woman, and child should be taught to cover their own closet seats with paper during use, especially whenever there is the least possibility of its being used by a stranger.

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### CYCLIC VOMITING AND THE EFFECT OF SODIUM BICARBONATE IN ACETONAEMIA.

B. W., aged 5 years, was, without warning, taken sick with severe headache and vomiting on the morning of July 12th. The vomiting persisted, and two hours later he became "unconscious" according to his mother, and remained so until I was called in at 5 p.m. He tossed about the bed semi-conscious, occasionally putting his hands to the head as if in great pain; the pupils were widely dilated but reacted to light. The breath had a sweet odour as had the vomited matter. The temperature (rectal) was 100°, pulse 90, regular. There were no signs of meningitis such as Kernig's sign or head retraction, and examination of heart, lungs, and abdomen were negative. The bowels had been confined for two days.

Repeated doses of saline aperient were ordered at 9 p.m., and were taken throughout the night. On the following morning there was general improvement; the breathing was quiet and regular; the bowels were being freely opened; the patient was in a sleepy condition. A few hours later (5 p.m.) unconsciousness again ensued, followed by restless delirium and marked "air hunger" and relapse. The breath again had a noticeable sweetish odour. The urine showed the presence of acetone. At 6 p.m. sodium bicarbonate (solution 1 in 30) was introduced by a catheter into the stomach and into the rectum, and morphine gr. $\frac{1}{12}$ was given hypodermically at the same time. After 6 oz. of solution, corresponding to about ʒij of sodium bicarbonate, had been introduced at 8 p.m., the patient recovered consciousness sufficiently to drink the solution. He drank this liberally throughout the night, and afterwards fell into a quiet sleep, which was continued for several hours, and was followed by complete recovery of consciousness and cessation of vomiting during the day.

The remarkable features of this case are (*a*) the suddenness of onset of vomiting and delirium without apparent cause; (*b*) the remarkable effects of alkaline administration in bringing the child back to consciousness; (*c*) the lapse back to delirium and air hunger supervening on discontinuing the alkali; and (*d*) recovery on the further administration of large doses of sodium bicarbonate.

Southsea. R. HAMER HODGES, M.B., B.S.Lond.

### A CASE OF SUPERFETATION WITH COMPLICATIONS.

THE following case is of interest, perhaps especially on account of the very small size of the second fetus, and because of its grave and finally fatal complications.

About ten days ago I was called to a confinement attended by a midwife; on arrival I found a healthy looking female child, apparently full time, and born some one and a half hours previously, an empty bag of membranes, and yet another bag of membranes in which was a fetus of about three months' gestation, and showing no

signs of decomposition. The two cords from the child and fetus were passing into the vulva, for no placenta had yet been born. There seemed no sign of the natural birth of the placenta, so the patient was given light chloroform anaesthesia and, after the usual aseptic precautions, a gloved right hand was introduced into the uterus. The placenta was very adherent, but with difficulty was peeled off and withdrawn. It was then found that the cord of the fetus was not attached to this first placenta, and there was soon discovered the second placenta, but, unhappily, too, a contraction ring could be distinctly felt, above which the placenta was firmly adherent. Only after a great struggle was the placenta removed, and then only after it had been torn. As may be imagined, haemorrhage was severe, and was only controlled after the injection of pituitrin, followed by ernutin, in addition to hot douching and manual compression of the walls of the uterus. The patient was lying in the kitchen of a two-roomed cottage, housing eleven people, so that conditions were not ideal. However, one was able to get things to give some rectal saline and a coffee and port wine enema, and the patient rallied wonderfully.

Unhappily a slow form of sapraemia set in, and the great loss of blood lowered resisting powers almost to vanishing point, and the patient died with a very subnormal temperature about eight days later.

The interest in the case seems to be the question whether it was one of real superfetation; this seems to me to be doubtful owing to the great difference of age of the two fetuses; probably the explanation is a twin pregnancy with early death of one fetus without decomposition. I believe this is the most likely explanation of such cases. Another point is, what part the two placentae played in the formation of the contraction ring; and, finally, why the premature birth of the membranes of the live child?

Ross-on-Wye. HAROLD O. LONG, M.R.C.S., L.R.C.P.

## SEPARATION OF TIP OF NOSE WITH COMPLETE PRIMARY UNION.

ON August 15th a man was admitted to King Edward VII Hospital, Windsor. While grooming a restive horse a skylight fell down and, breaking, cut off the end of his nose. In addition to the tip, the part missing included about one-third of the left ala and two-thirds of the right ala, besides the lower part of the septum and a small portion of the upper lip. A messenger sent down to the stable succeeded in finding the missing part, and about an hour after the accident it was sutured into place.

Under a normal saline dressing primary union took place, and the resulting effect is very good. The case is recorded as I do not recollect seeing a similar one reported.

Windsor. J. O. SKEVINGTON, F.R.C.S.

# Reviews.

## BE KIND TO YOUR OLD AGE.

THE recent death of a lady aged over 104½ years, the last survivor of a family of ten children averaging 90 years of age apiece at their deaths, affords a good example of the length of time the *memento mori* of birth may take in transmission to the members of long-lived families. How to secure the greatest length of life and how to enjoy its latter end to the greatest advantage are the main subjects of the fifth edition of the late Sir HERMANN WEBER'S well known work on *The Prolongation of Life*,[1] a classic written as much for the lay as for the medical reader; this edition is introduced by a preface from the pen of Sir Clifford Allbutt. Sir Hermann Weber took a serious but far from despondent view of the responsibilities of one who wishes to make the most, the best, and the longest of his life, and described in detail the precautions to be taken and the many dangers to be avoided by those who aim at living in a healthy manner. Fresh air, well chosen exercises—and the best of these he found was walking—diet, housing, climate, and general habits are all considered in turn; from his great experience and knowledge Sir Hermann was able at every juncture to draw lessons from which most of us may benefit, and if we may summarize his teaching in a phrase, that phrase would be, "Live the Spartan life." The vigour of every organ and the resisting power of the whole body are to be maintained by regular daily walks, rides, or other exercises, several hours a day are to be spent in the open air, and attention must be paid to ventilation of the home. Moderation in eating and drinking and all bodily enjoyments must be enforced; in particular, alcohol, he said, should be used as a medicine only, and is not necessary to healthy persons, and the entire liquor traffic should be controlled by the State. All possible steps should be taken to prevent disease—the common cold, for example—and to counteract any inherited tendency to disorders that may be present. Early to bed and early to rise, with no more than six or seven hours of sleep for the adult—or, exceptionally, eight hours—should be the rule, and a daily bath or cold rub and friction. From the mental and moral point of view equanimity and sympathy should be cultivated and all violent passions discountenanced. Sir Hermann Weber set a high standard, it is clear, but gave good reasons for his dicta, and he wrote with an earnestness that makes his personal style and autobiographical method highly convincing. The individual may do so much to prepare himself for old age and adapt his way of life to its gradually encircling restrictions, yet how comparatively rarely do we meet with due acquiescence therein! Here, at any rate, is a wise and soundly tempered volume, that should be read by everyone who contemplates growing old and would wear old age as a crown rather than a burden.

The other side of the shield, old age as a burden to self and others, is set out for medical readers at full length—from Alfred to Omaha, indeed, as has been said in America—by Dr. NASCHER, of New York.[2] Here the reader will find all details of the physiology, pathology, hygiene, and medico-legal relations of senility described in a truly practical manner, unencumbered with sentiment or undue sympathy for the victims of the disorders delineated. In his classification of the diseases met with in old age the author adopts a pathological basis, and divides them into five groups—as primary, secondary, preferential, modified, or uninfluenced by old age; as he says, the classification of diseases has not yet been placed on any sound foundation, and remains distressingly arbitrary. Dr. Nascher's text is dogmatic, and he has made free use of the works of specialists and others dealing with the maladies of the aged. Perusal of his pages leaves the reader gloomy and pessimistic, so long is the catalogue of senile ailments, so inevitable their incidence, so degrading their effect upon the individual, so unsympathetic is their reception by those who have to do with the invalid made to appear. Surely, one thinks, a little of the Rabbi ben Ezra touch might be communicated to the volume with advantage, in order to humanize it without impairing its value.

## HUMAN INFECTION CARRIERS.

As the war, with the large amount of work on the carrier problem, has taken place since the appearance of Drs. Ledingham and Arkwright's monograph on this important subject, there is room for a book summarizing the more recent knowledge thus acquired; this is provided by Dr. C. E. SIMON'S recent work on *Human Infection Carriers*,[3] issued during the present year. The infections considered are cholera, diphtheria, plague, enteric, cerebro-spinal fever, bacillary dysentery, acute poliomyelitis, the pneumococcic, streptococcic, and influenza. The part played by carriers in the dissemination of disease was established by Koch in his investigations into the 1892–93 epidemic of cholera in Germany, and this disease is therefore considered first. The author, while admitting that practically it is not essential to distinguish between the two kinds

[1] *On Longevity and Means for the Prolongation of Life.* By Sir Hermann Weber, M.D., F.R.C.P. Edited by F. Parkes Weber, M.D., F.R.C.P. Fifth enlarged edition, revised and partly rewritten. London: Macmillan and Co. 1919. (Med. 8vo, pp. xxii+292. 12s. net.)

[2] *Geriatrics: The Diseases of Old Age and their Treatment.* By I. L. Nascher, M.D., Chief of Clinic Department of Internal Medicine, Mount Sinai Hospital Dispensary, New York, etc. Second edition, revised. London: Kegan Paul, Trench, Trübner, and Co., Ltd., 1919. (Med. 8vo, pp. xx+527; 50 plates containing 81 illustrations. 21s. net.)

[3] *Human Infection Carriers: their Significance, Recognition, and Management.* By Charles E. Simon, B.A., M.D., Professor of Clinical Pathology in the University of Marlyland School of Medicine. Philadelphia and New York: Lea and Febiger. 1919. (Demy 8vo, pp. 250; 3 figures. 2.25 dols.)

of carriers, suggests the term "active carriers" for those who have passed through an attack of the corresponding disease, and "passive carriers" for those in whom the organisms have played a purely passive part. It is interesting to note that before the carrier problem was recognized, the occurrence of Pfeiffer's *Bacillus influenzae* in persons other than those suffering from that infection was urged as an argument against its responsibility for influenza; in the light of our present knowledge these observations show that influenza carriers are common, and that their frequency in patients with other diseases, such as pulmonary tuberculosis and measles, indicates that these maladies create a specially favourable soil for the growth of the influenza bacillus.

It is urged that, as there is reason to believe that in a city of the size of New York there are 25,000 typhoid carriers, some regulation such as registration is essential in the public interest. With regard to the medical treatment of typhoid carriers a very pessimistic view is taken, though attention is called to good results reported by Lentz from fortoin (formalized cotoin) in combination with extract of phytolacca (a laxative and cholagogue) and sodium bicarbonate. Vaccines are useless, but cholecystectomy promises better, and is preferable to mere drainage of the gall bladder, as the bacilli invade its walls. Universal prophylactic vaccination would theoretically stamp out the disease, and short of this would diminish the incidence of carriers in direct ratio to the number of the inoculated among those exposed to infection.

The recent work on poliomyelitis carriers is fully dealt with, and the probability of the frequency of carriers as compared with the number of actual cases is shown; this is connected with the relative insusceptibility to the disease, which has been estimated at 2 per cent. as compared with 90 per cent. in measles and 75 per cent. in whooping-cough. There is an interesting account of the camp septicaemia, due to a haemolytic streptococcus, which was responsible for such an appalling mortality in the military camps in America during the winter of 1917–18; the infection appears to have been introduced from without by healthy carriers among the recruits. In an appendix are the regulations enacted on the question of carriers by various states up to January 1st, 1918. The section on pneumococcic carriers is thoroughly up to date, and the monograph provides an admirable source of reference on the whole subject of carriers.

## PNEUMONIA IN THE U.S.A. ARMY, 1917–18.

IN a recently published monograph[4] of the Rockefeller Institute for medical research Dr. W. G. MACCALLUM has made an interesting summary of the bacteriological and pathological observations made in a number of cases of pneumonia, often following an outbreak of measles, in various United States army camps during the winter of 1917–18. Many types of lesion and bacterial infection were found in various combinations; the pneumococcus was generally associated with lobar pneumonia, the haemolytic streptococcus with either lobular pneumonia or interstitial bronchopneumonia, and these were the chief etiological agents. The bacillus of influenza was frequently found in the sputum, occasionally in the lungs and pleural fluid; it was always associated with the streptococcus, and Dr. MacCallum says that it was difficult to assign to it a predominant part in the causation of the pneumonia. He adds that there is still uncertainty as to the exact biological nature of the haemolytic streptococcus, of which several strains seem to have been isolated; indeed, in some camps numerous cases due to a non-haemolytic streptococcus were reported.

In practically all the cases of streptococcus infection he found a serofibrinous or fibrinopurulent pleurisy, sometimes persisting as an empyema after the disappearance of the earlier pulmonary lesions. In some of the camps independent epidemics of pneumonia arose without any preceding significant outbreak of measles. Describing the symptoms of the streptococcal pneumonia, the author remarks that it commonly began with a sore throat, fever, and cough; the physical signs in the chest were often indefinite until evidence of fluid in the chest appeared. Delirium, sleeplessness, dyspnoea, and cyanosis were common.

Two main types of pulmonary lesion are described. The first, called interstitial pneumonia, is said to be essentially the result of infection of the bronchioles with large numbers of haemolytic streptococci, leading to great changes in their walls and the adjacent pulmonary tissue. Here are found patchy collapse, nodules of consolidation round the terminations of the bronchi, haemorrhages round these nodules, and extreme engorgement of the pulmonary blood vessels. The bronchial walls are intensely engorged with mononuclear cells, and thickened; in some cases the bronchial mucosa is necrosed. Masses of streptococci are to be found in the lumen of the air passages, but only a few in the alveoli. The pulmonary lymphatics are often distended with pus, and often thrombosed and conspicuous for their size and yellowish-white contents; they, too, are full of streptococci. The effusion of fluid into the infected pleural cavity takes place very rapidly and may cause complete collapse of the lung; greenish-brown at first, the fluid later becomes more distinctly purulent. Rapid organization of the inflammatory exudate is everywhere characteristic in both lung and pleura; there is, in fact, a great tendency to heal, and to limit the advance of the streptococci by the induration of the infected tissues. There is probably no general septicaemia until a few hours before death.

The second type of pulmonary lesion, described as lobular pneumonia, lacks the firm nodules of consolidation described above; instead there are patches of consolidation in which the alveoli are filled with blood, leucocytes, and enormous numbers of streptococci. No interstitial changes and no signs of resistance are seen, but widespread necrosis of pulmonary tissue. In some instances both varieties of pneumonia occur side by side.

In an addendum to his report Dr. MacCallum gives a brief and non-committal note on the subject of the influenza bacillus and its importance in these recent outbreaks of pneumonia, including that of last winter. He finds that Pfeiffer's influenza bacillus may occur in pure culture associated with the interstitial bronchopneumonia described above, except for the absence of empyema. Using Dr. Goodpasture's new stain for Gram-negative bacteria, combined with Weigert's stain for Gram-positive organisms, he has restudied his material and has found the microbe of influenza in the bronchioles or alveoli of one-third of his cases. His general conclusion is that interstitial pneumonia may be caused by various organisms, including the pneumococcus, streptococcus, and influenza bacillus; where the infection is, as often, mixed, it is difficult to assign to each its exact part in the process.

## NOTES ON BOOKS.

THE fourteenth edition of HALLIBURTON'S *Handbook of Physiology*,[5] being the twenty-seventh edition of Kirkes' *Physiology*, which first saw the light in the year 1848, is, but for a few minor changes and an appendix on war diet, much the same as its predecessor. It is hard to find anything new to say about so old and well proved a friend of the medical student, to whom his "Halliburton" is, of course, invaluable. Perhaps room might be found in a later edition for the incorporation of some of the results of Krabbe's investigations into the structure and functions of the pineal gland. Needless to say, the book may be heartily commended to the attention of all students of physiology.

Dr. R. W. ALLEN'S *Practical Vaccine Therapy*[6] is a book written for the general practitioner by an enthusiast in the general method of treatment advocated, and one who is a believer in the method of the Big Stick. Dr. Allen holds that many of those who give vaccine treatment employ doses of bacteria that are all too small; to quote a characteristic passage from his introduction: "Almost every writer upon the subject of vaccine treatment in this country but myself," he writes, "will even now tell you to immunize a patient against a pneumococcal cold or bronchitis with a dose of 25 to 50 million;

[4] *The Pathology of the Pneumonia in the United States Army Camps during the Winter of 1917–18.* By William G. MacCallum, M.D. Monographs of the Rockefeller Institute for Medical Research, No. 10, April 16th, 1919. New York: The Rockefeller Institute for Medical Research. 1919. (Sup. roy. 8vo, pp. 147; 53 plates. 1.50 dols.)

[5] *Handbook of Physiology.* By W. D. Halliburton, M.D., LL.D., F.R.C.P., F.R.S. (fourteenth edition, being the twenty-seventh edition of Kirkes' *Physiology*). London: John Murray. 1919. (Demy 8vo, pp. xix + 936; 581 figures, 3 coloured plates. 16s. net.)

[6] *Practical Vaccine Treatment: For the General Practitioner.* By R. W. Allen, M.A., M.D., late Captain N.Z.M.C. London: H. K. Lewis. 1919. (Crown 8vo. pp. xiii + 308. 7s 6d. net.)

for years I have employed autogenous doses of at least 500 million for the purpose, and lately Avery, Chickering, Cole, and Dochez in America, Lister in South Africa, and Borel in France, have shown upon large bodies of men that dosages of 4,000 million of each of at least six different strains, or a total of 24,000 million pneumococci, can be given with impunity, and are necessary, according to laboratory tests, for the production of high immunity in these cases." The book contains sixteen chapters dealing with the preparation and administration of vaccines in various conditions of disease, and at the end the author gives a number of questions put to him and the answers he would give thereto. It is clear that he has had a large experience with the methods he advocates, and his book, written in didactic style, may be recommended to those who feel that in the matter of vaccine therapy their weak knees require strengthening.

The first volume of the fifth edition of a textbook of bacteriology by Dr. W. KOLLE and Dr. H. HETSCH[7] is a bulky work, and in the paper covered edition difficult to handle without detriment to the book. It is printed in clear English type and the frequent illustrations, while often needlessly diagrammatic, include one or two excellent microphotographs. The paper on which the book is printed is surprisingly good. There is no index, but possibly this will be remedied when Volume II is published. The authors themselves mention the disability under which they have worked, in having no access to the bibliography of the allied countries, and they might have been wiser to wait a little longer before placing this edition on the market. The chapters on the anaërobes and influenza are poor; in the former nothing has been done to advance this difficult subject from a teaching or any other point of view, and in the latter the recent experiences of the influenza epidemic are not taken advantage of. For the rest the work is painstaking, but to those who are not German-speaking, the many excellent British and American textbooks are more likely to appeal.

Dr. R. W. MACKENNA'S collection of twenty-five essays *Through a Tent Door*[8] somewhere in France are reflections of a cultivated and widely read medical man, and somewhat recall the flowing style of Mr. A. C. Benson. The first chapter, dealing with nature's immensity and the infinitesimal insignificance of the individual, gives the volume its title, and is followed by an attractive account of his tent library, entitled "Margarine and café-au-lait," from the two wooden cases containing respectively his medical guides (not one of which he says is literature) and his favourite authors—Borrow, the Brownings, Stevenson, La Rochefoucauld, Voltaire, and various poets. "At the Sign of the Red Triangle" is a sympathetic account of the work done by the Y.M.C.A., and "Anaemia G.O.B.," the initials signifying givers of blood, is a well written sketch. The book makes a pleasant holiday companion.

A general review of the trend of modern opinion as to the undoubted connexion between mind and medicine, mental processes and disease, with particular reference to the contributions of Freud thereto, is furnished by a lecture entitled *Mind and Medicine*[9] delivered at Manchester in April last by Dr. W. H. R. RIVERS. It may be recommended to a wide circle of readers.

A book that may be strongly recommended to the attention of general readers and medical men alike is *Life and its Maintenance*,[10] which consists of a series of fifteen essays on biological problems of the day, written by as many authors, each a specialist on the subject with which he or she deals. Strictly speaking, the book falls into the class of "war literature." But its subject matter is all of perennial, not temporary, importance; peace and the process of demobilization leave the interest of these essays as it was when they wore the uniform of military necessity. The subjects dealt with are: "The problem of food," "War bread and its constituents," "Vitamines in war-time diets," "Alcoholic and other beverages in war time," "The strategy of farming past and present," "The possibilities of increased crop production," "Grass land and arable," "Spraying problems," "Birds and insects in relation to crops," "Co-operation in food supply," "The physiological aspects of flying," "The anaërobic treatment of wounds," "Substitution of raw materials, paper," "Industrial efficiency and fatigue," and "Fresh air and efficiency." These essays are excellently written and full of direct or indirect interest to all of us. We wish this symposium the success it deserves.

Dr. COURTENAY DUNN'S *Natural History of the Child*,[11] described by the author as a book for all sorts and conditions of men, women, and children, offers the reader a history of childhood in all its various aspects. It is an introduction to child study, based on the historical method, and consisting very largely of quotations from books, pamphlets, and papers of all conceivable sorts, the quotations having but one feature in common—namely, that they bear in some way on the characteristics, history, pains, or pleasures of childhood, nowadays or long ago. Constructed thus of snippets, the book may be opened at any page and read with interest by the omnivorous reader; the collection has been put together by the author with no little skill and discrimination, and he writes in a spirit of the utmost sympathy with his subject. It is impossible not to admire the industry that has collected so much information and employed it with so much originality.

The fact that HARTRIDGE'S *The Ophthalmoscope*[12] has reached its sixth edition is sufficient proof of its popularity. The new edition has been carefully revised and hardly needs any words of ours to commend it. Mr. Hartridge rightly devotes a good deal of space to the appearance of the normal fundus, pointing out that, though the beginner usually prefers to look at abnormalities, it is absolutely essential for him to have a clear idea as to what is the normal. The longer a man works at ophthalmic surgery the more frequently does he come across cases in which it is extremely difficult to say offhand whether the picture presented is normal or pathological. A student who has made himself master of this little book should feel reasonably competent to give an opinion on all the more ordinary fundus pictures; in the difficult cases it is often a question of frequent examinations and careful watching of the case before even he who considers himself an expert can decide.

[7] *Die Experimentelle Bakteriologie und die Infektionskrankheiten.* By Dr. W. Kolle and Dr. H. Hetsch. Fifth edition. Vienna and Berlin: Urban and Schwarzenberg. 1919. (Super roy. 8vo, pp. xvi + 660; 42 coloured plates and 135 illustrations. 35 marks; 30 marks paper backed.)

[8] *Through a Tent Door.* By R. W. Mackenna, M.D., R.A.M.C. London: John Murray. 1919. (Pp. 310. 8s. net.)

[9] *Mind and Medicine.* A lecture delivered in the John Rylands Library on April 9th, 1919. London: Longmans, Green, and Co. (Super roy. 8vo, pp. 23. 1s. net.)

[10] *Life and its Maintenance.* A Symposium on Biological Problems of the Day. London, Glasgow, and Bombay: Blackie and Son, Ltd. 1919. (Cr. 8vo, pp. viii + 297. 5s. net.)

[11] *The Natural History of the Child.* By Dr. Courtenay Dunn. London and Edinburgh: Sampson Low, Marston and Co., Ltd. 1919. (Post 8vo, pp. 319. 7s. 6d. net.)

[12] *The Ophthalmoscope.* By Gustavus Hartridge, F.R.C.S. Sixth edition. London: J. and A. Churchill. 1919. (Cr. 8vo, pp. viii + 152; 65 figures, 4 plates. 6s. 6d. net.)

## BRITISH ASSOCIATION ANNUAL MEETING.

IN addition to the papers already noticed in the JOURNAL, attention may be directed to three other addresses at the British Association meeting in Bournemouth: "Industrial overstrain and unrest," by Dr. C. S. Myers, F.R.S., "Butter and margarine," by Professor W. D. Halliburton, F.R.S., and "A new theory of vision," by Sir Oliver Lodge, F.R.S.

Dr. C. S. MYERS spoke of the effect of monotonous application at light work for relatively long hours in producing a central nervous incapacity, which could be more serious than that caused by more strenuous muscular work for shorter hours. The fatigue of the higher centres was the warning sign of local exhaustion. In monotonous mental work the continual effort to repress incompatible mental processes led to a weakening of higher control and ultimately to signs of overstrain. To such causes could be attributed the manifestations of industrial unrest, slackness, irritability, and distrust. The war intensified the causes and rendered overstrain more aggravated. The lecturer discussed measures for preventing their recurrence. The hours of work and rest in different industries must be regulated according to the nature of the occupation, and the element of monotony should be counteracted by stimulating the interest of the worker in his work. There ought to be a whole-time industrial medical service of men specially trained in the conditions governing the workers' welfare, and such physicians should have executive as well as advisory powers. Sanatoriums and clinics should be established throughout the country for the treatment of cases of functional nervous disorder caused by overstrain.

Professor HALLIBURTON, comparing the food values of butter and of margarine, stated that the former contained

those accessory food factors, often called vitamines, which were essential to continued well-being, and which were wanting in the latter. Along with Professor Noël Paton he had investigated the question of using fatty acids to augment the fat supply by diluting margarine, and from experiments on rats and on men they found that they could be so used. He suggested that the margarine manufacturers should make an effort to use butter fat or some animal fat containing vitamines.

Sir OLIVER LODGE, in outlining a possible theory of colour vision, said that no mechanism was known to exist in the retina capable of responding to the ethereal vibrations of light. Something electrical or chemical was necessary, and he suggested that there might be certain atoms in the retina, perhaps in the black pigment, which were stimulated to radio-activity by the impact of light waves, and that these atoms, when they received waves, accumulated energy of the right frequency and stimulated the nerve. He proposed to put a piece of retina on an electroscope, and, by subjecting it to coloured lights, to see if it shot off electrons which would excite the electroscope.

## THE MORTALITY OF THE TUBERCULOUS AFTER SANATORIUM TREATMENT.

THE Medical Research Committee has issued a report by Dr. Noel Bardswell and Mr. John Thompson[1] on the after-histories of patients in the King Edward VII Sanatorium. One of the principal defects in reports upon sanatorium experience has been the large number of patients whom it has been impossible to trace, but Dr. Bardswell laid his plans so satisfactorily that only 3.5 per cent. of the patients discharged from the sanatorium from its foundation to 1914 remain unaccounted for, and the present study is based upon the record of seven years, covering the experience of 1,053 men and 654 women. The authors' principal object was to compare the mortality experienced by the patients with that of the general population, and they employed the actuarial method—first applied to such data by Palin Elderton and Perry, who analysed the Adirondack data—of contrasting the observed mortality with that which would have occurred had the patients died at the rates of English Life Table No. 8.

The general results are not very dissimilar to those reached by Elderton and Perry. Persons admitted in the incipient stage of the disease furnished five to six times as many deaths as would have occurred in an average sample of the population; moderately advanced cases gave a mortality ratio of 15 to 20; in advanced cases nearly forty times as many deaths occurred as were calculated on the life-table basis.

Dr. Bardswell and Mr. Thompson then pass to a series of detailed tabulations. They find that the smallest excess mortality is among those patients discharged when the disease appeared to be arrested, and remark that "the results just given suggest that so long as the patient, irrespective of his condition on admission, is making satisfactory progress, every encouragement and facility should be offered to extend the period of treatment, so that even if 'arrest' of the disease is improbable, except with prolonged treatment, the greatest improvement possible should be attained before he is discharged, in the hope that 'arrest' may follow as the result of after-care. The more residence in a sanatorium is prolonged, while further improvement is possible, the greater will be the economic return for the money and time thus expended."

A separate chapter is devoted to a comparison between the results of ordinary sanatorium treatment and sanatorium treatment combined with the use of tuberculin. The method of administration of tuberculin was that advocated by Bandelier and Roepke, which approximates to the "reactionless" method of Sahli and Trudeau. The statistics reveal no appreciable effect for good or ill exerted by the injections.

An analysis of the data, paying attention to the method of onset of the disease, suggests that the mortality was lighter in those cases in which the chief initial symptom had been haemoptysis than when the onset was more insidious. As might have been expected, disappearance of tubercle bacilli from the sputum was correlated with a lower rate of after-mortality. A family history of phthisis did not appear to have any influence upon prognosis; "patients with a consumptive family history enjoy the same chance of recovery as those who have no such history."

It is evident that when the total number of observations available is less than two thousand, sub-tabulation speedily reaches classes so small that the variations from class to class may be within the range of likely random fluctuations; hence many of the authors' detailed conclusions will need verification. The broad result that the death rate of persons discharged from sanatoriums, even with the disease "arrested," is a good deal higher than the average death rate is not likely to be shaken. This does not mean that sanatorium treatment is valueless; to measure the value of sanatorium treatment we should need to compare the results with those found in a sample of patients drawn from the same social class as the sanatorium inmates and treated on different lines. No such records are, or are likely to be, available.

As to the effects of tuberculin, in view of the almost theological acrimony which has characterized controversies between exponents of different methods of administration, we think it well to quote, in conclusion, a paragraph from the introduction to the report contributed by the Medical Research Committee:

> The authors describe their conclusions as to the value of tuberculin as being "distinctly disappointing," but it must be remembered that the negative results obtained here followed the administration of tuberculin by one selected method and system of dosage, and the only conclusion that can properly be drawn from the results now presented is that this method of treatment as practised in that manner at Midhurst did not give any evidence of its value.

[1] *Pulmonary Tuberculosis: Mortality After Sanatorium Treatment.* Report No. 33, Medical Research Committee. Stationery Office, 1919.

## PORTRAIT OF SIR CLIFFORD ALLBUTT.

WE publish below a further list of the names of subscribers to the Fund for presenting Sir Clifford Allbutt with his portrait. It will be seen that some subscriptions have recently been received from India, America, Australia and China. As it is intended shortly to close the Fund, the Treasurer requests all those who wish to take part in the presentation, but who have not yet notified their intention, to send their subscriptions without delay. The amount is limited to one guinea. Cheques and postal orders should be made payable to the "Sir Clifford Allbutt Presentation Fund," crossed London County, Westminster, and Parr's Bank, and addressed to the Treasurer of the British Medical Association, 429, Strand, London, W.C.2.

After the portrait in oils has been painted it is intended to commission a mezzotint engraving from it which subscribers to the Fund will be able to purchase for their own collections.

Professor Archibald Barr, LL.D. (Glasgow)
Professor J. H. Cameron (Ottawa)
Dr. E. Hayling Coleman (Wolverhampton)
Major H. M. Cursetjee, I.M.S. (M.E.F.)
Dr. H. V. Deakin (Lydney)
Dr. George Dock (St. Louis)
Dr. W. Douglas (Goudhurst)
Professor Umberto Gabbi (Parma)
Major D. L. Graham, I.M.S.
Dr. T. Duncan Greenlees (Fordingbridge)
Dr. W. Jobson Horne (London)
Dr. H. Simpson Newland, D.S.O. (Adelaide)
Major J. S. O'Neill, M.C., I.M.S.
Recent Graduate
Sir James Reid, Bt., G.C.V.O., K.C.B. (London)
Lieut.-Colonel Sir Leonard Rogers, C.I.E., I.M.S. (Calcutta)
Dr. C. H. Sedgwick (Weedon)
Lieut.-Colonel R. Shore, I.M.S. (Udaipur)
Dr. J. C. Teasdale (Retford)
Dr. G. L. Tuck (Peking)
Dr. J. Douglas C. White (Harrow-on-the Hill)
Dr. D. J. Gibb Wishart (Toronto)

ACCORDING to Dr. F. A. Miller, representative of the Rockefeller Foundation in Panama, from the time the investigation and systematic treatment of hookworm disease were instituted in that republic down to December, 1918, the number of persons examined was 86,525, of whom 68,768 underwent treatment.

## RABIES IN ENGLAND.

### REPORT BY THE CHIEF VETERINARY OFFICER.

OWING to the recent outbreak of rabies in England more than usual interest attaches to the annual report for 1918 of the Chief Veterinary Officer of the Board of Agriculture and Fisheries.

Sir Stewart Stockman begins this section of his report with a brief account of the steps successfully taken during the sixteen years between 1902 and 1918 to prevent the reappearance of rabies in the United Kingdom.

Rabies was finally eradicated in 1902, and stringent measures as regards imported dogs had been passed by Parliament to enable the Board of Agriculture to guard against its introduction from without. All such measures, however, depend upon the ability of the preventive authorities to enforce them, and to a large extent at least on the disposition of the public to respect their provisions and their object. It was possible to reintroduce rabies only by importing an infected dog and letting it loose. A dog infected in the rabies sense, however, is not necessarily an animal showing outward symptoms of rabies, for a dog infected by the bite of another may not develop the disease for several months. The basic principle of regulations for the exclusion of rabies is to impose upon imported dogs a period of observation in quarantine which is sufficient to cover the usual extent of the latent period of the disease. This apparently simple method is unfailingly effective, provided dog owners are prevented or refrain from smuggling in dogs in defiance of the regulations and their object.

For sixteen years these measures succeeded in preventing the reintroduction of rabies. Owing, however, to the extraordinary conditions arising out of the war, and partly to the fact that after prolonged unfamiliarity with the disease a section of the public failed, or refused, to realize the gravity to man and dog of introducing rabies into a clean country, the preventive measures broke down as regards the two main props upon which their effectiveness depended. The port authorities had to meet a very abnormal situation, in which their ordinary powers and facilities were greatly curtailed; this was accentuated by aërial traffic. The dog-importing public was also enormously increased and altered in character.

The first suspicious case of which the Board received notification and could inquire into fully was from Devonport; examination was completed on August 30th. The material was not fresh, but it was submitted to a series of expeditious tests for diagnosis instead of relying entirely on the older method, which takes from fourteen to thirty days. The results were highly suspicious of rabies. The problem, however, at that time was to ascertain not merely the diagnosis of rabies, but also whether the disease had re-invaded England. A veterinary inspector was sent down to report whether mysterious deaths of dogs had been taking place. As the result of his inquiry and the information acquired at the laboratory rabies was declared to exist on September 7th.

On September 9th an Order was issued prohibiting movement of dogs out of Cornwall and Devon and applying muzzling regulations to an area around Plymouth. Owing to the spread of disease the muzzling regulations were eventually applied to certain districts in the counties of Devon and Cornwall. The muzzling regulations through the remainder of these counties were less stringent. Owing to various obstacles there was considerable delay in the serious application of muzzling in practice, and its effective application did not obtain until the latter half of October.

Sir Stewart Stockman gives a table showing the incidence of the disease from August 24th to December 31st, 1918. The grand total during that period was 112 cases. A very notable decrease began in the monthly number of cases in the more congested Plymouth district almost immediately muzzling was effectively applied. Muzzling is admittedly very useful, though by no means wholly effective, in depriving a mad dog of its power to injure and inoculate others; but muzzling, without restrictions on movement, applied to infected areas would be ineffective in preventing the dissemination of rabies. When the Board of Agriculture took charge of the outbreak in Devon and Cornwall the position was serious owing to the length of time the disease had been lurking undiscovered. Two fortuitous circumstances, however, aided the operations: most of the cases were of the paralytic form, which greatly curtailed their wanderings and their ability to bite, and the majority of cases which ran elected to take a westerly direction, and by so doing came up against an effective sea barrier. Had it not been for these factors the situation might have been very much worse.

A special organization for expeditious diagnosis was set in motion at the laboratory, with the result that it became possible to give a definite diagnosis in as short a time as five hours after receipt of material, instead of from fourteen to thirty days as in former outbreaks.

The arrangements for seeking out human beings who had been bitten, and for their treatment, were carried out through the Local Government Board, as has been recorded in these columns. So far there have been no deaths from hydrophobia among the twenty-one persons sent for treatment.

After close inquiry it became clear that the original infection came from a rabid dog imported into England in defiance of the regulations, and that the infection was introduced at least as far back as the middle of May, 1918—that is, three and a half months before the first case was diagnosed. Evidence was obtained of some twenty dogs in the neighbourhood which had probably died from or been poisoned on account of rabies, their owners having stated that they had become vicious.

As is well known, rabid dogs incline to wander long distances from home, and some of these earlier cases sowed infection plentifully over a wide area of Devon and Cornwall. The position was further complicated by the difficulty of obtaining a sufficient supply of muzzles for some time after the Board of Agriculture took the disease in hand.

Much valuable information has been accumulated at the Board's laboratory as regards methods of quick and accurate diagnosis, and from the outbreak papers at the office regarding the epizootiology of rabies. This information, however, would be incomplete without drawing upon cases which occurred in 1919, and Sir Stewart Stockman proposes to deal with this part of the subject later.

Some important information was forthcoming during the period under report on the incubation periods of those cases in which it was possible to establish the date of the infecting bite with reasonable accuracy; this is given in the following table:

| Case. | Species. | Interval between Infection and Symptoms. | Month when Symptoms Appeared. | Remarks. |
|---|---|---|---|---|
| 1 | Dog | At least 24 days | October | — |
| 2 | ,, | 34 days | October | — |
| 3 | ,, | 79–85 days | November | — |
| 4 | ,, | 65 days | November | Bitten by same dog as 1 and 2. |
| 5 | ,, | 7½ months (in quarantine) | March (1919) | — |
| 6 | Bovine | 22 days | December | All bitten by same dog. |
| 7 | ,, | 23 ,, | ,, | |
| 8 | ,, | 27 ,, | ,, | |
| 9 | ,, | 27 ,, | ,, | |
| 10 | ,, | 34 ,, | ,, | |
| 11 | ,, | 84 ,, | February (1919) | |

The chief veterinary officer closes this section of his report by giving some of the distances covered, as the crow flies, by infected dogs during their run. In one case it was 20 miles, but the dog was shot (while still going strong) because it bit a man; in another case 8 miles, when it was shot because it had bitten two men and seven dogs; in another case 20 miles, when it was shot; in another case 12 miles, when it was captured by a policeman whom it bit—it died in captivity; in another case 22 miles, when it was captured and shot for attacking ducks; in another case 30 miles, when it was shot while still going strong; in another case 12 miles, when, after biting 10 people, it returned to its home and died two days afterwards; in another case 30 miles, after which the dog died exhausted.

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The Board of Agriculture announces that an outbreak of rabies was confirmed on September 19th, 1919, at Stebbing, near Dunmow, Essex. This outbreak has necessitated revision of the existing restrictions, and reconsideration of the modifications which the Board had in contemplation.

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THE total number of students of medicine in the five universities of Switzerland in the winter session 1918–19 was 1,704. Bâle had 230, including 19 women, of whom 3 were foreign; of the male students 34 were foreigners. Berne had 390, including 30 women, of whom 15 were foreign; of the men 125 were foreigners. Geneva had 317, including 62 women, of whom 47 were foreign; of the men 112 were foreigners. Lausanne had 244, of whom 22 were women, 8 of them foreign; of the men 52 were foreigners. Zürich had 523, of whom 101 were women, 8 of them foreign; of the men 95 were foreigners.

British Medical Journal.

SATURDAY, SEPTEMBER 27TH, 1919.

## RECENT WORK ON JAUNDICE.

FOR several decades diseases of the liver have been of particular interest to the French school of medicine, and full justice to the advances this school has made is done by Dr. Brulé in his recent book on jaundice.[1] He argues that the classical explanation of the occurrence of icterus — namely, that there is a mechanical obstruction of the larger or smaller bile ducts, or of both—is not satisfactory; because, save in the presence of gall stones or when the ducts are occluded by new growths, the experience of the *post-mortem* room shows that such obstruction is not present and that the bile passages are actually patent. It was commonly supposed that an attack of catarrhal jaundice was due to an ascending cholangitis, the inflammation of the larger bile ducts causing obstruction to the passage of the bile, until, about thirty years ago, the presence of bacteria in the bile of experimental animals with septicaemia was observed. The notion was then developed that jaundice might be due to a descending cholangitis and the production of a mechanical inflammatory obstruction to the passage of the bile through the finer bile ducts. It is certain that in many cases of mild and severe jaundice in human beings the bile is infected with bacteria from the patient's blood, the infection of the latter being demonstrable by early blood cultures, and the bacteria being passed through the hepatic parenchyma into the bile. But will this inflammation of the finer bile ducts explain the occurrence of jaundice? Probably not, because the inflammation is often present without jaundice — in enteric fever and septicaemia, for example; the angiocholitis is present, but is not obliterating in degree, as theory demands, and occurs either with or without jaundice.

The infective origin of most cases of jaundice being nowadays admitted (excluding, of course, those due to gross obstruction of bile ducts), these considerations lead to the conclusions that the biliary retention must be due to a hepatitis rather than an angiocholitis, and that the defect of secretion must lie in the liver cells themselves. The greater part of Dr. Brulé's book is devoted to proving that this is so; and further that the various functions of the liver cells may be dissociated in hepatic disease, so that the biliary retention may involve only certain constituents of the bile or all of them. The recent work of the Japanese on icterohaemorrhagic spirochaetosis has shown that very severe jaundice may occur without any inflammation of either the larger or the smaller bile ducts, though the secreting cells of the liver exhibit inflammatory and degenerative lesions of all sorts. In the same way the bile passages are free from inflammation in the jaundice of alcoholic cirrhosis or Hanot's biliary hypertrophic cirrhosis, and in various forms of toxic jaundice (post-anaesthetic, phosphorus poisoning, etc.); hence the lesion causing the jaundice must be looked for higher up, in the secreting cells of the liver rather than in the bile-ducts.

From the clinical point of view the bile salts and the bile pigments are the only two biliary substances that are of interest in cases of disordered function of the liver, whether with or without jaundice. For the presence of bile salts in the urine Hay's test with flowers of sulphur is still the best, and for practical purposes trustworthy, except with patients taking cubebs, copaiba, sandalwood oil, or turpentine by the mouth. Dr. Brulé draws attention to a test devised by himself and Lemierre in 1910 for judging indirectly how far the bile salts are reaching the intestine normally; this consists in studying the intestinal absorption of fat by examining the blood for ultramicroscopic particles, Raehlmann's haemoconia or blood dust. These particles appear in the blood an hour after a meal rich in fat, reach a maximum in from two to five hours, and then diminish gradually; they vanish altogether only after twenty-four hours of fat starvation, and do not appear after the ingestion of any food except fat of any sort. If the bile salts fail to reach the intestine the absorption of fat cannot take place; the absence of pancreatic juice here is indifferent. Hence examination of the blood with the ultramicroscope—a simple matter—will tell whether or not the bile salts are reaching the intestine. As for the bile pigments, Gmelin's classical but thoroughly bad test for their presence in the urine should be replaced by Grimbert's more complex method (precipitation with barium chloride, extraction with alcoholic hydrochloric acid, giving a green solution); the presence of bile pigments in the faeces and blood should also be tested for. Seeing that the bilirubin retained in the bodies of jaundiced patients is to some extent excreted as urobilin in the urine, it is important—and particularly so in mild cases of jaundice—to look for an increase in the normally small urinary excretion of this substance, which when found may be taken as evidence of a partial biliary retention.

Dr. Brulé devotes most of his book to proving the frequency with which the retention of the various biliary constituents in jaundice and hepatic disorders is dissociated or partial and not total. In haemolytic jaundice, for example, the bile salts continue to reach the intestine in normal amount. In some cases of catarrhal jaundice the bile pigments have been found to return to the bile some days before the bile salts, in others the pigments and salts returned together. Pruritus and bradycardia are particularly likely to occur when there is retention of the bile salts; in these cases, too, there is failure to absorb fatty foods. In alcoholic and biliary cirrhosis there may be attacks in which jaundice is absent but the bile salts are retained—a state of affairs comparable to that seen in many observed cases of convalescence after catarrhal jaundice. Similar dissociated jaundice has been reproduced in experimental animals, using either picric acid or a specific hepatocytotoxic serum to establish the jaundice. It is clear, Dr. Brulé argues, that the lesion must lie in the secreting cells of the liver and not in the bile ducts in all cases of dissociated biliary retention, with or without jaundice; and he has interesting chapters that cast a new light on the various problems of hepatic disease. As he says, the proven frequency of cases of dissociated biliary retention makes it impossible to hold any of the various obstructive theories of the occurrence of jaundice, whether the obstruction to the passage of the bile be held to take place in the larger bile ducts, the smaller bile ducts, the capillary bile ducts between the trabeculae of the cells in the hepatic lobules, or

[1] *Recherches récentes sur les ictères.* Par Dr. M. Brulé. Paris: Masson et Cie. 1919. (Post 8vo, pp. 182. 4 fr. 50 + 10 per cent.)

final'y in an inspissation of the bile itself. To meet the argument that there should be a diminution in the activity of the liver cells in hepatic diseases generally, and that acho'ia or lessened production of bile should be the rule, he marshals the experimental evidence upon which are based our views on the preponderating part taken by the liver cells in the production of the various constituents of the b.le. He concludes that many tissues of the body can and do convert haemoglobin into bilirubin; and argues, though without being able to produce any c'ear experimental evidence in favour of his view, that bile salts may be manufactured in the alimentary tract or elsewhere and arrive preformed at the level of the liver cells, and not be formed there exclusively. Were this so the liver cells would normally act as filters for the pigments and salts of the bile, rather than as laboratories for their manufacture; and so the occurrence of dissociated biliary retention would find an easy explanation whenever hepatic inflammation occurred and the normal activities of the liver cells were upset.

In many cases of jaundice, described as haemolytic, it is the blood that is at fault, and not primarily the liver. Haemolytic jaundice occurs in tuberculosis, syphilis, malaria, and various bacterial infections of the blood, for example, and here the blood serum contains haemoglobin or its derivative bilirubin in excess. Dr. Brulé argues that jaundice described as haemolytic is often really hepatic in origin, and due to the effect of the infection on the individual liver cells. In his chapter on jaundice due to obstruction of the bile ducts he points out that here the two chief constituents of the bile make their appearance in the urine together, and that the onset or such intermissions of the icterus as may appear are sudden and complete, without the gradations seen in other varieties of jaundice. In conclusion, he holds it as now proven that injury to the secretory cells of the liver is the common cause of jaundice, and that jaundice by obstruction of the bile ducts may be regarded as relatively infrequent.

## SCHOOL MYOPIA.

THE very term "school myopia" implies the acceptance of a theory, made in Germany, that there is a type of short-sight engendered, or at any rate increased in degree, by school work. Cohn was one of the first to formulate this hypothesis, and although founded on very flimsy evidence it received wide and almost unquestioned acceptance. This myopia theory has almost become glorified into a Law of Nature, and has even influenced policy, in that in London and elsewhere we have myope schools in which a modified education is provided for short-sighted children with the object of inhibiting increase in their myopia. If the theory really is a law then there is every justification for the provision of such schools, and for restricting study by myopes. If, however, it should turn out that Cohn and his supporters are wrong, then it is quite unjustifiable to spoil the future of short-sighted children by depriving them of a normal course of study, and myopia schools should be employed solely for the education of the bad-sighted, to educate those who cannot see well enough to take advantage of the normal school course. The short-sighted are generally studious and take pleasure in books; they make useful citizens and are successful in every work of life in which good distant sight is not essential. If all young myopes are forced into the myope schools their future career of usefulness will be restricted, and they will not be able to compete in the "brain market" as they do at present with conspicuous success.

The Cohn theory depends upon the fact that in schools myopia increases in incidence and degree from the lower forms upwards; it is, however, equally true that the disability increases in children who never see a school, and in adults long past school age. It has never been shown that the increase is greater or more rapid in school children than in those who do not attend school. It is said that engravers, dressmakers, and others who use their eyes for close vision over long periods furnish more myopes than the rest of mankind, and that urban populations are more affected than rural. The former statement is probably true, for myopes take more kindly to near work than do hypermetropes, and choose it in preference to other occupations. Again, dressmakers work long hours under bad hygienic conditions, and any factor which lowers the general tissue-tone must act equally upon the sclerotic coat, and tend to increase the tendency to short-sight.

The idea that urban populations furnish a larger proportion of myopes than rural is open to question, and even if true is no proof that urban conditions cause myopia; the studious myope naturally gravitates to a town. But is it a fact? Statistics show that high myopia with changes in the fundus is more common and more severe in rural districts, and the reason is not obscure. There is evidence that myopia is apt to be strongly hereditary, and among rural people close intermarriage is often common, so much so that a very few surnames may suffice for a village. The same is even more true of mining villages, in which marriages outside the mining class would seem to be discouraged. But even in the case of myopia of low and moderate degree it is very doubtful whether the supposed superiority of the village can be substantiated. Ernest Thompson, ophthalmic surgeon to the County of Lanark Education Authority, has just published an illuminating article upon the incidence of myopia in Lanarkshire.[1] The figures he gives are as follows: Urban districts 17 per cent., rural districts 20.5 per cent., mining, agricultural, manufacturing districts 26 per cent. We suggest that the reason why the mining and rural districts head the averages is the existence of hereditary defect fostered by intermarriage.

It cannot be said that there is any theory which explains the onset and increase of myopia. The facts are that myopia is due to stretching of the sclera with consequent elongation of the optical axis of the eye. The disease is often though not always hereditary, and there is a strong racial predisposition. It is very common in Germany and among the Jews, comparatively rare in the British Isles. It is found in most races—even among the Bedouin Arabs, who never read or go to school. High myopia occurs in young children below the school age, and it often affects one eye only. The last two facts seem to exclude the possibility that the cause is to be found in close work. Nor are any of the many theories which have been propounded to explain how near work stretches the sclera capable of scientific proof. It has been said that muscular action raises the intraocular tension and stretches the sclera. Unfortunately for this theory, in conditions of raised intraocular tension we do not get myopia, but cupping of the optic disc and buphthalmos. The hypothetical rise of tension during accommodation has never been determined by methods which cannot be destructively criticized. We believe that myopia is neither originated nor increased by near work.

[1] *British Journal of Ophthalmology*, July, 1919.

## MALARIA IN ENGLAND.

VARIOUS reports and papers on malaria contracted in England in 1918 have been brought together for publication by the late Local Government Board,[1] in continuation of similar reports dealing with 1917, which appeared a year ago. Dr. G. S. Buchanan again gives a general review based mainly on the work done during the year by Lieut.-Colonel S. P. James, Adviser on Malaria to the department. One result of the inquiries made during 1918 was to bring to light more cases of malaria of indigenous origin than were reported last year. The total number of locally contracted cases notified or discovered since September, 1917, was 330, of which 38 were in the navy, 224 in the army, and 68 in the civil population. It is believed that 231 cases were contracted in 1917, and only 99 in 1918, but the latter figure will probably be increased by the detection of patients this year who contracted infection last autumn, but in whom the symptoms of the disease have not yet shown themselves. But, since there are no records for the first eight or nine months of 1917 of the seasonal incidence and prevalence of anopheline mosquitos and of other factors governing the incidence of malaria, a reply cannot be given to the question why the incidence of locally contracted cases in 1918 was so much lower than in the previous year. There are grounds, however, for thinking that although the strictly preventive measures undertaken in 1918 were only partially successful, the measures of control effectively stopped any epidemic spread of the disease. All the locally contracted cases so far reported in this country have been infections with the benign tertian parasite. Clinically the great majority of the English cases showed typical signs and symptoms of "tertian ague," with paroxysms coming on at or about the same time every other day. No death occurred. In all the cases infected in this country relapses have been less frequent and less severe than is usual in malaria contracted in the tropics. While cases of indigenous origin occurred in a number of widely separated places, only in Kent was there a considerable spread of the disease. In the army almost all the locally contracted cases were attributable to the presence near at hand of relapsing cases of malaria among soldiers returned from Eastern war areas. On the civil side also the sources of infection were usually relapsing cases among returned malarious soldiers. Of the three English anophelines, *maculipennis* is believed to have been responsible for all the cases investigated. There is reason to think that this species is present in nearly every rural district, and in or near almost every town in England. Owing to the cessation of hostilities the total number of malaria carriers transferred to England in 1919 will doubtless be greater than in any year of the war. Although great pains are taken by the War Office and other departments concerned to ensure that both before and after demobilization malarious soldiers get proper treatment, many are being demobilized who have recently had malarial parasites in their blood, and are therefore still liable to relapses. Since these men, instead of being concentrated under military supervision in mosquito-proof huts in limited areas, are now scattered throughout the country, each in his own home, Dr. Buchanan has good ground for holding that constant watchfulness and, when necessary, prompt action are needed to prevent the occurrence of new cases. He concludes his review with a short account of the measures already taken to prevent indigenous infection. Surgeon Captain Bassett-Smith reports on naval cases and Sir Ronald Ross on military cases of malaria contracted in England, while Lieut.-Colonels S. P. James and E. Wilkinson give a summary of civilian cases, and the former discusses the risk of spread of infection in relation to demobilization. Mr. A. J. Grove, M.Sc., supplies a note on the prevalence and habits of anophelines in England; and, lastly, there are extracts from the pamphlet "Suggestions for the care of malaria patients," drawn up for the use of medical practitioners by Sir Ronald Ross and Colonel James. This publication will be of special interest to those who attended the discussion on malaria at the Clinical Meeting of the British Medical Association last April.

[1] New Series, No. 123. H.M. Stationery Office. 1919. Price 1s. 6d. net.

## EDUCATIONAL EXCHANGE WITHIN THE EMPIRE.

Of the many practical lessons that the war has taught there are few of more importance than those which relate to education itself. Just as we have learnt that scientific methods are essential to the application of brute force in battle, so must we recognize that they are no less necessary as a driving force in peace time. But scientific methods can only be acquired by education, and there is urgent need for adequate teaching in all branches of industry at the present time. Within the army itself this need is being met by the establishment of classes for instruction in all the subjects, other than military, which may be of use to the young men who will shortly be returning to civilian life. A conference on the whole subject of education within the empire was held in June last under the leadership of the Chief of the Imperial General Staff. The official report[1] contains a verbatim record of the opinions, suggestions, and criticisms offered by a large number of fully representative speakers drawn from all parts of the British Empire. Mutual co-operation in teaching and examining may be said to have been the dominant note, and this would imply the maintenance of a uniform standard. The question of the interchange of degrees between one university and another did not meet with such general approval. Representatives of the old residential universities naturally regard the fixed period of residence as an essential preliminary to the granting of a degree. Oxford and Cambridge insisted upon residence within the university on the part of students or graduates who may have studied elsewhere, but in other respects were willing to co-operate in a scheme of interchange. Medical education was discussed from the post-graduation point of view only. In times past the average medical graduate had been content to take his home degree and to study special lines of practice under the guidance of well recognized teachers, either at home or abroad. Hitherto he has found in the French, German, and Austrian schools more facilities for concentrated study than in this country. As our columns have recently shown, serious efforts are now being made to remedy this state of things, and to make the vast clinical resources of our great towns, and more especially the metropolis, available for graduate study. Co-operation with schools of medicine in other parts of the empire should bring the best teaching in every branch of professional work within the reach of advanced students and graduates without regard to the question of degree-giving, which is a matter for the universities to deal with.

[1] *Imperial Education Conference.* Convened by the Chief of the Imperial General Staff. 1919. Price 6d. net. H.M. Stationery Office.

## TUBERCULOSIS IN THE COUNTIES.

THE annual reports issued by county tuberculosis officers continue to show advances in available accommodation and a fairly satisfactory return of success in treatment. In both respects, however, the figures are very far behind the hoped for minimum. In Hertfordshire Dr. Hyslop Thomson records a wider appreciation of the benefits of early treatment. The provision of open-air shelters for home use has proved of considerable value, but the problem of the advanced case remains as far from solution as ever. The spread of the disease will not be checked until health authorities "have the power to remove advanced cases of

tuberculosis when the conditions and circumstances of the patient prevent the carrying out of precautionary measures in the home." In Northamptonshire an endeavour has been made to restrict admission to the sanatoriums to early cases, but much difficulty has been found in persuading incipient consumptives that the time devoted to early treatment will in the longrun prove to have been time saved. The work is undertaken by a branch of the National Association and a fixed charge is made for sanatorium treatment. The report contains a copy of the regulations in force for the guidance of intending patients, the greater number of whom have obtained admission through county council or insurance channels. The difficulty of refusing such cases is obvious, even though the prospect of improvement is but small. The tendency to regard sanatoriums as asylums for troublesome cases should be rigidly combated, but the provision of village centres and farm colonies may in time to come relieve the sanatoriums from encroachment upon their proper function of restoring working capacity to the incipient case.

## INFLUENCE OF WORKING HOURS AND OF VENTILATION UPON OUTPUT.

In a report issued by the Industrial Fatigue Research Board,[1] Dr. H. M. Vernon reaches some interesting and important conclusions on the subject of output in the tinplate industry. The millmen engaged on this work not only have to perform extremely arduous physical labour, but they are exposed to fierce heat, and stream with perspiration soon after beginning. It would therefore be expected that shortening hours of labour might be followed by an improvement in output. Dr. Vernon found that on four hour shifts the hourly output was 11.5 per cent. greater than on eight hour shifts, and on six hour shifts 10 per cent. greater than on eight hour shifts. Hence in a six hour day a man would produce about 82½ per cent. of the quantity he could furnish in eight hours. As, however, the working week is shorter for six hour than for eight hour shifts, this comparison is somewhat too favourable to the six hour shift. Dr. Vernon also found that in ill-ventilated factories a much greater seasonal variation of output existed than in a well-ventilated mill, and he thinks that by the introduction of efficient ventilation the average hourly output in certain factories might well be increased by 12 per cent. or more. Consequently it is possible that in most factories the hourly output on six hour shifts might be made 20 per cent. better than that of the old eight hour systems. Even so, there would be a lessened output per man, but of course the utilization of the plant would be more perfect.

## TOLSTOI'S PICTURES OF CONSUMPTION.

No reader of Tolstoi can fail to be struck by the degree to which his mind was clouded by the shadow of consumption. In youth he had seen the disease in his own family, and it seemed at one time as if he were doomed to share the fate of his two brothers. In 1852 he described himself as constitutionally delicate, though of strong frame. The climate of the Caucasus, where he then was, did not suit him. He had a troublesome cough, and was almost constantly confined to his room. In 1856, at Iasnaïa-Poliana, he had a serious attack of bronchitis, from which he made an imperfect recovery, and the cough became chronic. In search of health he went to the Samara Government for a koumiss cure. In 1860 he was pronounced to be tuberculous, and a portrait taken at that time shows a typical consumptive very different from the rough-hewn moujik of later years. Although the progress of the disease was checked, it pursued him as a threatening spectre through the rest of his life. His portrayal of consumption makes us regret that clinical descriptions drawn with such clearness of vision and such artistry of expression are so rare in literature. Shakespeare's picture of the signs of death from strangling in the Duke of Gloucester in the Second Part of *Henry VI*, the Lord Chief Justice's enumeration of the effects of alcohol as seen in Falstaff, Dame Quickly's account of the Fat Knight's death, and the poet's descriptions of various forms of madness, show an accuracy of observation of which there are few examples in medical books. In *Don Quixote* Cervantes has left a picture, limned with consummate art, of madness wrecking a noble mind. For many modern writers of fiction the problems of disease seem to have a morbid fascination. Zola's descriptions, made up of medleys of hastily gathered and ill understood facts, are coarse and ineffective. Even Conan Doyle, though a doctor of medicine, sometimes slips; while of most others we can only say *non ragioniam di lor*. Tolstoi had stood by the deathbed of his brothers Dimitri and Nicholas, and observed their agony with the sympathetic attention of one who believed that he would before long pass through the dark valley in his turn. He pictures the hair bedewed with sweat, the beautiful and serious eyes full of anxiety, and the skeleton-like hands, prominent shoulder-blades, ribs, and vertebrae. The illusion of speedy cure persisting to the last breath; the irritability with those ministering to him; the eager snatching at the slightest favourable symptom; the complaints, even when Death's dart is about to strike, that counsel had not been sought of some special oracle of medicine; the despairing prayers to ikons—have not all doctors witnessed the scene? Both brothers, though men full of the apostolic spirit and burning with love of their fellow men, had passed through a moral crisis, manifesting itself in a sudden lapse into the lowest debauchery. It is in *Anna Karénina* and *Three Deaths* that the most vivid pictures of consumption are given, while the *Private Journal* tells the story of Tolstoi's own life. The reader is made to see the disease in all its outward and visible aspects. The painfully realistic description of the death of Levine's brother in *Anna Karénina* was written under the impression left on Tolstoi by the death of his own brother Nicholas, which, as he says, disgusted him with goodness. In the real account he has softened the lines. Up to the very end, he says, Nicholas retained his strength of character and his power of will in spite of constant brandy drinking. He did everything to save those about him inconvenience. On the day of his death he dressed without help, and it was only nine hours before the end that he asked to be put to bed. He uttered no complaint, and expressed gratitude to every one. Leo Tolstoi himself went through a phase of moral eclipse similar to that which wrecked the lives of his brothers, but his stronger nature and loftier genius enabled him to emerge triumphantly into a brighter existence. Whatever may be thought of the practical value of his teaching he was a sower of ideas such as the world has seldom seen.

## GLUT OF MEDICAL MEN IN GERMANY.

In an editorial notice in *Aerztliche Mitteilungen* retired officers and other prospective students of medicine are warned of the state of congestion in the medical profession. This warning comes as a reply to the rumour that, since the November revolution, many young officers intend to leave the services and to study medicine in the belief that medical men can at any rate earn their daily bread. It is pointed out that even before the war there was a glut of doctors in Germany, and that the war has made matters rather worse than better. For during the war the medical profession was reduced by at most 3,100, whereas it was increased by about 6,500 newcomers, whose qualification as medical practitioners was hastened on account of the war. Further, the ranks of the private practitioners have

[1] *The Influence of Hours of Work and of Ventilation on Output in Tinplate Manufacture.* By M. H. Vernon, M.D. (Report No. 1, Industrial Fatigue Research Board). Stationery Office. 1919. Price 6d.

recently been recruited by many medical officers who have left the navy and army. Again, many German medical men have withdrawn from the occupied districts east and west and have settled in the interior. If this editorial statement be correct, and Germany lost about 3,100 medical men in the course of the war, it must have lost, roughly, 10 per cent. of its doctors; for in 1918 they numbered between 32,000 and 33,000.

## THE HUNTERIAN SOCIETY.

THIS year marks the centenary of an old City medical society, the Hunterian Society. In common with most professional and scientific bodies its meetings were somewhat curtailed during the war, but the society now hopes to renew its full activity. The ordinary meetings will be held on the second and fourth Wednesdays of the month, from October to April, at 9 p.m., at the School of Oriental Languages (formerly the London Institution) in Finsbury Circus. An attractive programme has been arranged, beginning with an address by Professor Arthur Keith, F.R.S., to be delivered on October 8th in the Hall of the Society of Apothecaries. The centenary dinner will be held on October 22nd, when Sir Norman Moore, President of the Royal College of Physicians of London, will propose the health of the society. In January Dr. Leonard Hill will lecture on Hunter's influence on physiology, and in the following month Sir William Osler will deliver the Hunterian Oration. The President of the society is Dr. W. Langdon Brown, and Dr. F. Howard Humphris and Dr. R. L. Mackenzie Wallis are the Honorary Secretaries.

## DISEASES OF THE AMAZON VALLEY.

IN 1916 Dr. A. H. Rice led an expedition to study the physical geography of the region about the Casiquiare Canal, a natural waterway between the Rio Negro and the Orinoco River, and the medical report[1] was drawn up by Professor W. T. Councilman and Dr. R. A. Lambert, from the School of Tropical Medicine, Harvard University. This solitary region is the most unchanged and unchanging part of the world, and has an unenviable reputation for its insect pests and its endemic diseases. The ants, though they do not convey any diseases, are the most ubiquitous; one, the tucandera or conga, is gigantic, an inch or more in length; its sting causes great pain and prostration, and multiple bites have proved fatal. There is, however, the compensation that the ants remove all faeces in a few hours, so that, in spite of the absence of privies in the villages, there is little evidence of soil pollution, and enteric fever is rare. Very troublesome are two biting flies—the pium and even more so the micuims, the latter being so small as to be only just visible to the naked eye. Chronic malaria is extremely prevalent in the Amazon valley, both in the cities and in the sparsely settled districts along the rivers. The Indians in the towns and villages on the river suffer from much the same diseases as the white population, but very little is known of the remote forest Indians. Dr. Rice found the Uaupes Indians curiously free from the most dreaded diseases of civilization, such as cancer, syphilis, tuberculosis, rheumatism, and appendicitis, but subject to malaria, eye diseases, influenza, and intestinal parasites. Ulcers were extremely common in whites in the hospitals of Pará, Manaos, and Iquitos; these ulcers have been thought to be due to leishmaniasis and to insect bites. Finally, the question whether or not the country is a possible or desirable place for the white man to live in is discussed, and it is clear that, as there is no population to furnish labour, there can be no possibility of the development of such a civilization as in India. The land is fascinating, but there is a great need for accurate information on all points, and the country must be developed by a people willing to work and evolve slowly a civilization suitable to the environment.

[1] Medical Report of the Rice Expedition to Brazil. By W. T. Councilman, M.D., and R. A. Lambert, M.D. Cambridge, Mass.: Harvard University Press. (Med. 8vo, pp. 126; 35 figures. 5s. 6d. net.)

## THE NÉLATON PROBE.

IN a recent paper Warren recalls the origin of the Nélaton probe.[1] It was made at Nélaton's direction to detect a leaden rifle ball which he felt sure was lodged in the internal malleolus of Garibaldi. There had been a considerable difference of opinion as to whether the missile was retained or not. Partridge of Dublin, who was summoned, thought not; but a month later, in consultation with Pirogov and Nélaton, he changed his opinion. To make certain Nélaton had a probe constructed with a porcelain tip, and when this was introduced into the wound (by proxy) the lead marks on the tip were plainly visible. This was regarded at the time as a great triumph for French over British surgery. The ball was extracted, but the wound took many months to heal. Warren publishes an interesting photograph of Nélaton, a man of handsome features and distinguished bearing, standing at the bedside and holding the hand of Garibaldi.

## TYPHUS IN POLAND.

WE have already announced that an Inter-Allied Medical Commission, consisting of Colonel H. S. Cumming, United States, chairman; Dr. G. S. Buchanan, Great Britain; Dr. Aldo Castellani, Italy; and Dr. Visbecq, France, were sent by the League of Red Cross Societies, at the request of the Polish Government, to investigate the typhus situation in Poland. The mission has now returned to Paris. According to a Reuter's message the epidemic has been very widespread and the number of deaths enormous. Fresh cases are constantly being introduced from the East by refugees, prisoners of war, and the repatriated. The Polish Minister of Public Health and the Army Medical Service are carrying on an active campaign against typhus. Personnel and supplies are insufficient, and the hospitals are lamentably deficient in sheets, blankets, drugs, and essential equipment. Not only typhus but relapsing fever, typhoid, and dysentery are prevalent, and the Commission fears that very severe epidemics will occur in the coming winter unless the most energetic measures are taken to deal with existing conditions in Poland, and to prevent the spread of typhus and other epidemics to Western Europe and America.

THE seventh annual conference of the National Association for the Prevention of Tuberculosis will be held at the Central Hall, Westminster, on October 16th, 17th, and 18th. The subject for discussion by the conference will be the completion of tuberculosis schemes throughout the country in relation to (1) the Ministry of Health; (2) local authorities and insurance committees; (3) pensions boards and committees; (4) general practitioners; (5) Red Cross and other voluntary activities; (6) training of doctors and nurses. The opening address on October 16th will be given by Dr. Addison, Minister of Health, with Lord Glenconner in the chair.

[1] *Boston Med. and Surg. Journ.*, 181, 1919, p. 235.

THE Home Secretary is about to appoint a whole-time vivisection inspector under the Cruelty to Animals Act, 1875. The appointment will be for a term of four years in the first instance, at a salary of £800 a year, together with war bonus on the Civil Service scale and travelling allowances at the usual rate. Candidates who possess the necessary scientific qualifications for the work should apply to the Private Secretary, Home Office, London, from whom further particulars may be obtained. Applications should be accompanied by one or two testimonials and particulars of the candidate's qualifications, and should reach the Home Office not later than October 10th.

# Ireland.

### THE PUBLIC HEALTH COUNCIL.

THE Chief Secretary, as Minister of Health for Ireland, has nominated the following to be members of the Irish Public Health Council:

Dr. E. Coey Bigger, Medical Commissioner, Local Government Board, Chairman; Sir John W. Moore, President Royal Academy of Medicine of Ireland, Chairman of the Public Health Committee of the General Medical Council; Dr. R. J. Rowlette, nominated by the Irish Medical Committee; Dr. Alice Barry, Medical Superintendent Child Welfare Work Branch, Women's National Health Association, nominated by the Irish Medical Committee; the Countess of Kenmare, Chairman of the Advisory Council for Ireland of the Queen Victoria Jubilee Institute; Mrs. J. McMordie, member of the Tuberculosis Committee of the Belfast Corporation, member of the Belfast Insurance Committee; Sir James M. Gallagher, J.P., ex-Lord Mayor of Dublin, ex-Chairman of the Dublin Joint Hospital Board, member of the Dublin Tuberculosis and Insurance Committees; Mr. J. Ewing Johnston, M.B.E., President North of Ireland Veterinary Medical Association; Rev. P. Kerlin, C.C., Bellarina, Derry, nominated by the National Association of Insurance Committees (Ireland); Mr. John Drennan, representative of the Approved Insurance Societies.

In addition to the above nominated members the following persons are *ex officio* members of the Council:

The Vice-President and two other Commissioners of the Local Government Board, the Chairman and two other Irish Insurance Commissioners, the Registrar-General of Births, Deaths, and Marriages in Ireland. Major Geo. A. Harris, D.S.O., O.B.E., of the Local Government Board, has been appointed Secretary to the Council.

The offices of the Council will be at 33, St. Stephen's Green, North Dublin, but any communications before October 1st, 1919, should be addressed to the Secretary, Irish Public Health Council, Master of the Horse's House, Dublin Castle. The first meeting of the Council will be held on Thursday, October 2nd.

### DYSENTERY OUTBREAK IN DUBLIN.

The City Medical Officer of Health for Dublin, in a recent communication to the press, states that the outbreak of dysentery is being successfully combated. A considerable decrease took place in the number of cases treated last week as compared with the two previous weeks. There are, however, a number of suspected, but undiagnosed, cases. Medical opinion inclines to the belief that the present outbreak in the city originated with some demobilized soldiers. In the early stages of the outbreak it gained considerable headway owing to the fact that its similarity to other diseases which usually occur at this period of the year left the people with a false sense of security. This disease is difficult to combat in cities like Dublin, where so many tenement houses exist. A few isolated cases have occurred through the city, but the virulence of the disease has so far practically centred in one area. The Medical Officer of Health draws attention to the danger of flies as carriers, and urges shopkeepers to take due precaution against the fly pest. He advises that as successful treatment depends largely on immediate attention being paid to early symptoms, cases should be reported to the medical authorities at once.

# Scotland.

### THE LATE PROFESSOR TRAIL.

THE death took place at Aberdeen, on September 18th, of Professor J. W. H. Trail, who had held the chair of botany in the University of Aberdeen for forty-two years. Professor Trail was born in 1851. He graduated M.A. with highest honours in natural sciences in 1870, and took the M.B. and C.M. degrees with highest honours in 1876, proceeding M.D. in 1879. After travelling in North Brazil as naturalist to an exploring expedition, he was appointed, at the early age of 26, to the regius professorship of botany at Aberdeen. He wrote much on botanical and zoological subjects in scientific journals, and was a Fellow of the Royal Society and of the Linnean Society.

### GLASGOW DINNER TO OVERSEAS MEDICAL OFFICERS.

We are glad to learn that the Divisions of the British Medical Association in the Glasgow area are full of energy at the present time, and that many new members have been added to the Association. A dinner has been arranged for November 4th, in the Grosvenor Restaurant, at which Sir Donald MacAlister, K.C.B., M.D., Principal of the University, has promised to preside. The guests of the evening will be the medical men (some 200 in number) who before the beginning of hostilities in 1914 were in practice in the Glasgow area and have served overseas. A representative committee has been formed from the Divisions of the Association in the Glasgow area, including the presidents and secretaries, so that the success of the venture is already assured. The active spirit of the project is, we believe, Dr. Kennedy Glen, honorary secretary of the Glasgow and West of Scotland Branch. During the war twelve of the Glasgow practitioners died on active service, and whatever funds are in hand after the dinner will be reserved for the purpose of erecting a suitable memorial to them.

### APPOINTMENTS.

It is announced from Geneva that Dr. Leonard Findlay, physician to the Royal Hospital for Sick Children, Glasgow, has been appointed director of the Department for Child Welfare of the League of Red Cross Societies.

The Joint Selection Committee representing the Edinburgh Town Council and the managers of the Edinburgh Royal Infirmary have recommended Captain David Lees, D.S.O., M.D., F.R.C.S.Edin., for the post of clinical medical officer for Edinburgh under the venereal diseases scheme. Captain Lees is at present specialist in venereal diseases to the Derby County Council. There were thirteen applicants for the post at Edinburgh, which carries with it a salary of £750 a year.

# Correspondence.

### MUSIC THERAPY.

SIR,—I have read with interest the editorial in the BRITISH MEDICAL JOURNAL of September 20th on the philosophy of music. You refer to the fact that a "guild came to grief, and, as far as we know, nothing has since been done . . . to organize research on music as a healing agent." You then refer to the fact that in Columbia University, New York, courses of music therapy have recently been established in which the indications for specific instruments in the treatment of shell-shock neuroses are studied. May I be allowed to say that two years ago I started singing as a health restorative to the nervous system of soldiers convalescent from war neuroses, and through the energy and interest taken by the Countess Dowager of Carnarvon, "vocal therapy" for restoration of health through speech and song and correct breathing has received the widest support, and has already accomplished much. I should be obliged if you would allow me to bring this before the profession. The Vocal Therapy Fund is well deserving of support, and full particulars of the work and its aims can be obtained by application to the secretary, 32, Charles Street, Mayfair, W.1.—I am, etc.,

London, W., Sept. 19th. FRED. W. MOTT.

*** Sir Frederick Mott encloses a leaflet setting out the aims of the Vocal Therapy Fund. The chairman is Sir Bryan Donkin, and medical members of the committee include Lieut.-Colonel Martin Flack, Dr. Dundas Grant, Sir F. W. Mott, Dr. C. S. Myers, and Dr. Jane Walker.

### "THE CULT OF INDIVIDUALISM."

SIR,—Dr. Fothergill's letter in the JOURNAL of September 13th raises the all-important question for our profession as to whether we are to be recognized by Government departments as a united body who know what we want and mean to get it, or, on the other hand, a miscellaneous collection of unions or bodies each of which is bidding for the confidence and support of the members of

our profession, and each of which, if recognized by Government, may speak in a different voice regarding our aims and legitimate demands.

I am not contending that our British Medical Association constitution and methods are perfection and leave nothing to be desired; but at least we have in it a democratic body whose policy and condition of affairs can be directed by representatives, in the choosing of which each member can have a voice, and any sound idea for progress or reform emanating from any member can, with the consent of his immediate *confrères*, be sent forward to the Representative Meeting or Panel Conference. In fact, in the latter case the individual need not be a member, his only qualification being that of a panel practitioner; and here we come to the real crux of the matter, which is apathy.

It is easy to say, "Oh, the British Medical Association can't do anything for us; the men who really know what a general practitioner wants don't get elected to represent us, and if they do they don't get a chance, and the executive is too weak-kneed; they kowtow too much to Government," etc. But these very men will not realize that the remedy of electing the right man and galvanizing him into getting the chance is their own job, which in nineteen cases out of twenty they will not bother to exercise. A far better test of the British Medical Association in my opinion is to be sought from the lay public; and from acquaintanceship with Labour representatives on various public bodies I learn that we are looked upon as the strongest trade union in the world, and that they only wish that they had the power and cohesion we have. This opinion has been gained not once but many times in a part of the country well known as a strong and powerful trade union centre, and it is, I am convinced, the usual attitude with which we are regarded—surely an incentive to us to redouble our efforts to make our premier organizing body as powerful in numbers and enthusiasm as we are deemed to be.—I am, etc.,

J. ORTON,
Chairman, Warwick and Coventry Panel Committee.

Coventry, Sept. 13th.

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SIR,—The interesting letter of Dr. E. R. Fothergill might equally well have appeared under the title of "The Cult of Socialism," which illustrates the absurdity of the vulgar error that socialism and individualism form an antithesis to each other. There are many thousands of unconscious socialists at the present time, and many thousand conscious socialists who are well aware that they are strong individualists.

I am one of many who have welcomed the advent of the Federation of Medical and Allied Societies, because I think it may remove the scales from the eyes of many who think they differ when in reality they are in substantial agreement on the majority of points. A great deal of discord is produced by lack of knowledge, and unity can only be approached by free and friendly discussion to find out where we agree and where we still differ, for the position has altered much in the last few years, and is now rapidly changing.

As an example, current views regarding that section of medico-political thought with which I am connected may be cited; it has been accused of attempting to thrust a State medical service of bureaucratic type upon an uninformed nation and unwilling medical profession. It may relieve some to know that nothing is farther from our wishes; the majority of us hate such bureaucracy as holds sway at the present day as much as do those who declaim against it. Our object is to educate both public and profession as to the need for a complete and effective service, both preventive and curative, governed democratically in the interest of the nation by the laity and profession combined.

During the past seven years we have seen many of our original tenets pass into the law of the land, and others will undisputedly follow under the new Ministry of Health; it is no part of our programme to hasten unduly this natural sociological evolution, but rather to guide it aright so that it may be built upon stable, enduring lines. There are probably only two tenets in which we differ from the majority of the profession—first, that there should be no income limit imposed against recipients of benefits, and, secondly, that the personnel of the new service should be paid by salary.

On the other hand, there are a score of advances upon which the great majority of the profession and thinking public alike are united as desiderata of the future; why cannot we, then, under the auspices of the British Medical Association, unite in guiding the future of these new advances? If this could only be done it would give the profession a position and a prestige such as it never has possessed in the past.

The medical profession has never authoritatively guided the nation in matters of health administration, and this is what is wanted above all things at the present moment.

As examples of such matters I simply recount the following heads upon which the nation requires such united advice as the profession can give it, and upon which I am convinced there is less discord amongst us than most of those think who have not studied the subject deeply:

1. A public health service on national lines for the prevention of disease.
2. A service for the treatment of disease, to include not only manual workers but all the women and children.
3. A research service richly endowed, equipped, and manned to study causation, prevention, and cure of disease.
4. An increase and reorganization of hospitals, sanatoriums, and convalescent homes so that serious and infectious cases may all be properly isolated and adequately treated.

Most of the detailed objects at present lacking will be found capable of inclusion under one or other of these headings. Not one of the four is there at present which does not present obvious deficiencies or defects that can be remedied and cry out for attention.

The nation cannot be made healthy by Acts of Parliament or Orders in Council; its salvation lies in evolving such an organization that medical knowledge now available, or to come in the future, can be applied to remedy evils which we all recognize. If the medical profession will only awake to its duties and lead the nation onward, it need have little fear as to those material considerations which at present bear so hardly upon many of us because of the stress of the times.—I am, etc.,

BENJAMIN MOORE,
President, State Medical Service Association.

London, N.W., Sept. 21st.

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SIR,—Might I reply as follows to the two points in Dr. P. Macdonald's letter, a copy of which he kindly sent me in advance?

Individualism is not confined to units; it is also possible in groups, in families, in tribes, and in nations. Is it not another name for selfishness? I would like to draw his attention and that of your readers to the recent speech of Mr. G. N. Barnes, M.P., at Walworth, made subsequent to my previous letter to you; it is worthy of careful perusal and consideration by all members of our profession. Might I quote one paragraph from it?

> Amid much that was discouraging there was now visible a new and more menacing danger in their midst. They were becoming accustomed to a struggle of organizations, which was worse than that of individuals, because the antisocial result would be more far-reaching and terrible. This was an age of organization, and if organizations were rightly used they would tend to equalize the chances of life. Organization was in itself a good thing, but it must be controlled by those who would consciously work for the common good. If organization were lopsided and governed only by materialistic and sectional considerations, then rival organizations could get a stranglehold on the community, and every one would suffer, including the members of such organizations. That was the danger with which society was now confronted.

Dr. Macdonald's second point is that if a new medical organization should arise based on a new principle, then one should hesitate to condemn it. That would depend on the principle; and whilst one must recognize the good intentions and own to great sympathy with those who advocate trade union principles for the medical profession, one is bound to point out that the weak link in the interpretation of the principle is not the State (locally or centrally) when pressure has to be applied, but rather some few or more of the disloyal members of the medical profession itself who would at the last push be in a position—owing to the present economic conditions of medical practice—to flip their fingers at any attempt made to dictate to them how and in what manner they should conduct their professional activities, and who could count, unfortunately, on public sympathy in so doing. If that is so, then is not one justified in trying to dissuade groups of medical practitioners from relying on the application of a

principle to improve their position which can only result in disaster?

The honorary officers of the British Federation of Medical and Allied Societies—as was expected and anticipated in my letter in your issue of September 13th—use the well worn heresy that they cannot be considered a rival to the British Medical Association, and that they are not amongst those who condemn either the machine of the Association or those who control it. That being so, it would seem to be the time to ask those officers certain questions, the replies to which, in plain and unmistakable language, seem to be due to the Association and to the members of the numerous societies stated in their circular of July 30th, 1919, to approve of their federation.

Accepting the objects of the federation to be those outlined in that circular, and briefly referred to in their letter in your last issue, will they state—

(*a*) Which of these objects do they consider that the British Medical Association cannot carry into effect, and why?
(*b*) What is the power which they consider to be necessary in order to attain these objects; how do they propose to obtain that power; and when obtained, how do they propose to use it?
(*c*) Has not the Association that power at present? If not, can it not obtain that power; and, if not, why not?

These questions one would venture to put also to the officers of the many societies stated to have joined this federation, and in addition ask whether they consulted their constituents before joining the federation?

Whilst awaiting these replies it will be sufficient to add that, judging from many letters received, several of these societies' officers seem to be in the greatest confusion with regard to their position; others are already alarmed at the activities of the federation; whilst others frankly condemn the same as folly, and the body as a conglomerate and heterogeneous formation.

This letter being already too long, I must reply direct to numerous letters so far received.—I am, etc.,

Hove, Sept. 22nd. E. ROWLAND FOTHERGILL.

## THE TEACHING OF MIDWIFERY.

SIR,—I am not surprised that the report of the Committee on the Teaching of Gynaecology has called forth a letter from Dr. Stark. Long ago I drew attention to the same subject in the BRITISH MEDICAL JOURNAL, and to the absurd waste of clinical material at all the large hospitals. During forty years' experience I have found that 50 per cent. of women in labour require chloroform and assistance, either by the forceps or other means. Nevertheless, students are condemned, whilst attending their 20 cases, to sit still and render no assistance to the poor woman, nor call for assistance, unless there s some very grave complication, or unless the woman is thoroughly exhausted by a day or two of pain.

In my opinion, at every large hospital there should be at least four young qualified men in residence, to go in couples wherever the maternity assistant reports an abnormal case, or undue delay when the os is dilated or dilatable. One of these men could give chloroform and the other deliver the child in difficult cases, and let the maternity assistant put on the forceps and deliver in simple cases. In this way each student would see at least ten cases of forceps delivery or turning, and would not be sent out, as he is at present, to start practice with less practical instruction than a midwife.

Of course cases beyond the skill of the two outdoor assistants could be sent by ambulance into hospital, to be dealt with there by the assistant obstetric physician. The skilful application of the forceps, under chloroform, in every case where there is the slightest delay, not only saves the woman great and unnecessary pain, but she makes a better recovery. If the placenta is expressed immediately after delivery, or removed by the hand if expression fails, and the uterus is made to contract by firm pressure, *post-partum* haemorrhage never occurs. Not only so, but there is no absurd waste of time, as there is when a practitioner waits on nature, or adopts some feeble expedient like twilight sleep. In any ordinary case of chloroform and forceps the skilful practitioner need not spend more than half an hour at the patient's house.

I do not for a moment suggest that this saving of time would be justifiable unless the results both as regards mother and child were better than if nature were unassisted; but my experience is that the rapid method gives much better results; and this is confirmed by the reports of younger men whom I have taught.—I am, etc.,

North Shields, Sept. 20th. F. C. MEARS.

## THE PREPARATION OF SODIUM MORRHUATE.

SIR,—In my paper on sodium morrhuate in tuberculosis, published in your issue of February 8th, 1919, I stated that the full details of its preparation, together with the reports of those who had tried it, would be published in an early number of a quarterly Indian medical journal. As after the lapse of over six months the publishers of the journal in question informed me that they had not received the manuscript and the date of publication is still uncertain, I seek the hospitality of your columns to record the following details of the method of preparation of the drug for the information of a number of correspondents who have asked for it.

*Preparation of Sodium Morrhuate.*

100 grams of cod liver oil, 20 grams of NaOH (dissolved in the same volume of water), and 200 c.cm. of rectified spirit are boiled on the water bath under a reflux condenser for about four hours. The solution is then mixed with a little water and exactly neutralized with dilute $H_2SO_4$.

Some of the alcohol is then recovered and the solution mixed with nearly 200 grams of fairly large-grained sand (washed with HCl and water) and the whole quickly evaporated to dryness on the water bath.

The dry residue is then extracted with sulphuric ether in Soxhlet's apparatus (using ice water in the condenser) and the fatty acids liberated by a slight excess of the calculated quantity of dilute $H_2SO_4$ (say, a diluted solution of nearly 18 c.cm. of strong $H_2SO_4$ of sp. gr. 1.82).

The fatty acids liberated are washed several times with water to free from $H_2SO_4$ and then neutralized (using phenolphthalein as indicator) with a solution of pure NaOH, using much rectified spirit and as little water as possible. The neutral solution is quickly evaporated to dryness on the water bath.

I may take this opportunity of mentioning that several favourable reports have reached me since my paper was published of the use of sodium morrhuate in not too advanced phthisis as well as in gland and bone cases, including abdominal tuberculosis and caries of the spine.—I am, etc.,

Calcutta, Aug. 28th. LEONARD ROGERS.

## EARLY MENTAL HOMES.

SIR,—I am in agreement with Dr. White's letter in your issue of September 20th, but should like to go further than she does and suggest that even the title "Mental Homes" will prevent people from availing themselves of treatment when suffering from really early symptoms of mental disorder.

The public has decided for itself to term all early stages of mental disorder "Nerves," and is willing—more than that, anxious—to avail itself of treatment at recognized hospitals for nervous diseases. But the slightest suspicion that such an institution is for "mental cases," or is in any way, no matter how remote, connected with the asylum system, will cause it to be shunned by the very people for whom it is intended.

This may seem much ado about one word, but we must remember that a word is more than a word—it is a symbol, and if we use a symbol which conjures up to the minds of our patients or their relatives the dread phantom of insanity we thereby erect a very effective barrier between patient and early treatment.

As Dr. White remarks, when detention is not involved legislation is not required. Now, in the vast bulk of early cases for which a few—alas! too few—voluntary institutions are endeavouring to make provision, detention is certainly not required. Why, then, risk the success of the new movement by allowing it to become associated in fact or by word with the lunacy authorities?

The "Mental Treatment Bill" was wisely rejected, for its special provisions were calculated to defeat the ends it was intended to promote. If we wish to secure to the public the admittedly enormous advantage of really early treatment we must do so in a form which is not only free from danger of abuse, but is attractive rather than repellent to those whom we seek to benefit.

As I have argued elsewhere,[1] the term "hospital for nervous disorders" appears entirely acceptable to the public, and I venture to suggest the desirability of its

[1] *Lancet*, August 9th, 1919.

general adoption by the institutions now springing up in order to provide really early treatment.

I am convinced that if these institutions are to prove the success we desire, it is of fundamental importance that they should be entirely dissociated, both in word and deed, from lunacy and asylum.—I am, etc.,

Birmingham, Sept. 22nd. ALFRED CARVER.

## STIFF KNEE IN COMPOUND FRACTURE OF FEMUR.

SIR,—Captain Beresford Alexander's article (September 13th, p. 339) has a peculiar interest to me, as it so graphically describes an important but common sequela following the injury—unfortunately so common during the war.

Naturally, at a military convalescent hospital one only sees the result of the treatment in vogue at countless hospitals, and though I agree in the main with Captain Alexander's deduction, I would make the following suggestions:

First, much of the resulting periarticular adhesions might have been avoided had there only been less mechanical fixing of the limb on the usual Thomas or straight splint. By this I mean it is extremely rare to find in these cases any which have been treated by simple extension made upon the lower fragment. It is extremely easy to dogmatize, but of this I am certain, that had extension been made on the lower fragment, more or less flexion of the knee could have been used, massage commenced at a very early period, and the greater part of these periarticular adhesions dealt with from the start, and the mischief to the muscles minimized, and later a Bristow's coil used.

Secondly, the anaesthetic. In my opinion gas, except in slight cases, is contraindicated; its influence is too brief. The tendency is for the surgeon to do too much or too little under gas. I learnt that whilst a student at University College, London, when, being a light-weight, and supposed to be conversant with the methods of getting the judge's eye, I rode a great deal for a very celebrated bonesetter, and so saw much of the treatment in his extensive and lucrative practice. I soon realized that, though gas was excellent in cases of slight adhesions, much harm often resulted from the violence demanded in the brief period of gas anaesthesia. I have therefore never tackled firm or extensive adhesions, except under chloroform or ether, when the patient is completely anaesthetized and one can do any manipulation at leisure and intelligently.

Thirdly, in the actual treatment of these cases I invariably find they have been so'ely treated by faradism or galvanism, often in a most feeble way, and no ionic course attempted. Now, had ions been used with massage at an early period, many of these periarticular adhesions would not have become the organized masses we generally have to tackle, and until these adhesions are more or less absorbed satisfactory results cannot accrue from Bristow's coils.

As the hospitals are closing down we naturally get more chronic cases. I never see one without wishing that early flexion of the knee-joint had been employed with ionization.—I am, etc.,

Ashton-in-Makerfield, Sept. 20th. P. BROOME-GILES.

## THE FEE FOR A *POST MORTEM*.

SIR,—I am very pleased to see Dr. Flack's letter on this subject in the JOURNAL of September 20th.

I note the possibility of a meeting between the Parliamentary Committee of the Association and the Committee of Medical Members of Parliament on the subject. It would not be an inopportune moment to discuss the anomaly of no fees being paid for inquests and *post-mortem* examinations held on those who die in hospitals and similar institutions.

Whether it is fair or not that fees should be withheld in the case of hospitals where the staff gain some advantages, either through teaching, the prominence of their position, or the special opportunities they have in the matter of clinical experience, I express no opinion; but I feel sure when the Act was passed it was not intended to apply to the honorary staff of cottage hospitals and such-like institutions as it does at the present moment.

A letter to this effect, sent by me some years ago to the Home Secretary, received the answer that special legislation would be required in the matter and the Government did not then see their way to such action.—I am, etc.,

September 22nd. J.P.

SIR,—Although the legal fee for performing a *post mortem* and giving evidence at the inquest is £2 2s. it must not be forgotten that the coroner's officer takes 2s. and the *post mortem* clerk 5s., so that the medical officer is left with £1 15s. and not £2 2s.—a handsome sum for what is more often than not a three hours' job.—I am, etc.,

London, N.W., Sept. 20th. E. CLIMSON GREENWOOD.

## RURAL PRACTITIONERS' REMUNERATION.

SIR,—I note with some concern the names of the committee to deal with rural practitioners' remuneration (SUPPLEMENT, September 13th). I have read with much interest the letter of Dr. Williams-Freeman on the mileage fund, in the JOURNAL of September 20th.

I note with amazement that there is no practitioner to represent the remote parts of the kingdom—(1) the Yorkshire moors, (2) the Fen district, (3) the Western counties. I have not noted whether there is to be a special grant to those remote districts, as in 1912. If so, and this grant is left to the doctors concerned and the grant is adequate, I am satisfied. If this be not so, I am not satisfied to leave my interests in the hands of this committee.

Unless men have worked in these remote districts they can have no possible conception of our difficulties.

They should know (1) the surface of our roads, (2) the gradients, (3) the density of population, (4) the distances often to be walked from our cars, (5) the climatic conditions.

In Devon and Somerset I have about 800 insured patients; 500 of these are over three miles from me, 200 are over seven miles, and 100 are over ten miles. Some years ago I walked over eighty miles in a week to see patients through snow-drifts. Once I rode through a track cut for me 18 ft. deep. I protest this is out of all proportion to seeing patients in an urban or semi-urban district.

I have, Sir, been more than once taken to task for asserting that the interests of the urban and rural practioners are not synonymous. Well, they are not, and never can be until our remuneration is equitably adjusted. Now is the time.—I am, etc.,

Dulverton, Somerset, Sept. 22nd. GEORGE F. SYDENHAM.

## TEMPERATURE OF RABBITS.

SIR,—In the JOURNAL of September 20th, p. 390, you record experiments by Professor Heymans on a rabbit's temperature. He says that a rectal temperature of 43° C. was fatal in a few minutes.

As chairman of the executive of the Rabbit Commission in Australia I made some observations on the rabbit's temperature, and on one occasion found a rectal temperature over 45° C., and the animal lived at least a day. I do not know how much longer, as I left the Tintanalogy Station the next day.—I am, etc.,

W. CAMAC WILKINSON, M.D., F.R.C.P.

London, W., Sept. 24th.

## NEURASTHENIA AND ANXIETY NEUROSES.

SIR,—On reading Sir William Hale-White's views on neurasthenia and anxiety neurosis, delivered at the South Midland Branch of the British Medical Association, one cannot help feeling perturbed as to the future teaching of the post-graduate course in London if such views pertain. Sir W. Hale-White's utterances are so very contrary to all those who have had to do with functional nervous diseases during the past few years, that one is forced to conclude his experience has been very limited, and yet a very limited experience should be sufficient to enable any one to differentiate clearly between neurasthenia and anxiety neurosis. It is all the more unfortunate, for Sir W. Hale-White occupies a prominent position, and his remarks are apt to take on an acceptance which, put into practice, would be detrimental to the patient.—I am, etc.,

A. KINSEY-MORGAN, M.D., M.R.C.P.

Bournemouth, Sept. 16th.

### NEW NAVAL RATES OF PAY.

SIR,—If your correspondent "M.O.," whose letter was published in the JOURNAL of August 30th, will refer to the "Statement showing the Recommendations of the Committees in regard to the pay, half pay, retired pay, and allowances of officers of the Royal Navy and Royal Marines, with the decisions of the Government thereon," he will see that he is quite mistaken in saying that the right of a medical officer to retire with a gratuity has been abolished. This document can be obtained from any bookseller for 3d., and on page 4 the Committee recommends, "Systems of allowing medical officers to withdraw with a gratuity to remain in force and present rates to be maintained." This recommendation has been approved by the Admiralty.

Further, it is not essential for a medical officer to remain until the age of 50. Optional retirement at 40 is to be allowed for all ranks at Admiralty discretion, and at 43 a surgeon commander is qualified for the maximum retirement of £600, provided he has completed twenty-one years' service.

"M.O." says, "At present the retiring pay of a surgeon commander is, roughly, £550 a year," but he does not add that he has either to be 55 years of age or have completed thirty years' service in order to obtain it. The new regulations do not state that all medical officers drawing specialist allowance will be employed in shore appointments, and it is quite likely that they will not be.

Had your correspondent drawn attention to the decision that "no change is to be made in the present rates" of pensions and gratuities to widows and allowances for children, he would have had more reasonable ground for complaint. It is pitiable to think of the widow of an officer of perhaps thirty years' service trying to exist at the present time on a pension of £80 a year with an allowance of from £14 to £16 for each child, and the latter only up to the age of 18 in the case of boys.—I am, etc.,

September 17th. S. C. R.

## The Services.

### RETIREMENT OF I.M.S. OFFICERS.

A ROYAL WARRANT dated June 13th, 1919, has been published by direction of the Governor-General of India in Council, amending the rules regarding the age of retirement of officers of the Indian Medical Service. The preamble states that with a view to furthering the efficiency of the Service the ages have been altered at which I.M.S. officers holding administrative appointments shall be placed on the retired list, subject to the safeguarding of the rights of officers now holding these appointments.

The Director-General will be placed on the retired list at 60 instead of as heretofore at 62; colonels, brevet colonels, and general officers at 57 instead of 60; provided that in any special case where it would appear to the Governor-General of India in Council to be for the good of the service that a general officer holding an administrative appointment should be continued in employment, he may be so continued for not more than one year.

The age at which lieutenant-colonels and majors will be placed on the retired list remains unaltered at 55.

A lieutenant-colonel who entered the service before April 1st, 1911, and who has been specially selected for increased pay under Article 8 of the Royal Warrant for the Indian Medical Service dated May 28th, 1913, may, if he attains the age of 55 years before he becomes entitled to the pension for 30 years' service, be retained until completion of such service. The Warrant dated May 28th, 1913, for the promotion and precedence of the Indian Medical Service, will be amended accordingly.

Consequent on the issue of the above Royal Warrant, it has been decided, with the approval of the Secretary of State for India—

(i) That the tenure of administrative appointments in the Indian Medical Service shall be four years, but officers will be eligible for reappointment up to the age limit for retirement;

(ii) That the rates of pension admissible to officers of administrative rank in the Indian Medical Service, in addition to the pension for length of service, shall be as follows:

| | Per annum. |
|---|---|
| Major-General, after 3 years' active service as such ... | £350 |
| Major-General, after 1½ years' active service as such... | £300 |
| Colonel, after 4 years' active service as such ... ... | £250 |
| Colonel, after 2 years' active service as such ... ... | £125 |

Officers at present holding administrative appointments will be allowed the option of electing to service under the new rules.

### HONOURS.

A LIST of medical officers mentioned for war services was printed in the JOURNAL of September 13th, p. 357. The permanent naval rank (Surgeon Commander R.N. ret.) of Temporary Major G. E. Macleod, R.A.M.C., was omitted in the official War Office *communiqué*.

#### FOREIGN DECORATIONS.

The following decorations have been conferred by the King of Rumania for distinguished services rendered during the course of the recent campaign:

*Order of the Star of Rumania* (*Grand Cross*).—Chevalier: Temporary Captain Francis Charles Robbs, M.C., R.A.M.C.

*Order of the Crown of Rumania*.—Grand Officer: Major-Generals Alfred Percy Blenkinsop, C.B., C.M.G.; John Thomson, C.B., C.M.G. Officer: Captain Arthur Cecil Heys McCullagh, D.S.O., R.A.M.C.(T.F.). Chevalier: Captains Herbert Leslie Garson, O.B.E., M.C., R.A.M.C.(S.R.), Frederick Jeffersen, R.A.M.C.(S.R.). Temporary Captain John Norman Lonsdale Thoseby, R.A.M.C.

## Universities and Colleges.

### UNIVERSITY OF LONDON.

COURSES of advanced lectures on physiology will be given during the forthcoming session by Dr. da Fano on the histology of the nervous system, at King's College; by Dr. E. Mellanby, on nutrition, at King's College for Women; by Professor A. D. Waller, on the energy balance of the human body, and electrical signs of emotive phenomena, at the Imperial College of Science and Technology; by Dr. J. W. Trevan, on the reaction of the blood and acidosis, at St. Bartholomew's Hospital; and by Dr. Pembrey and Dr. Ryffel, on the regulation of respiration, at Guy's Hospital.

## Obituary.

### GUTHRIE RANKIN, M.D.GLAS., F.R.C.P.LOND. AND EDIN.,

Consulting Physician to the Dreadnought and Royal Waterloo Hospitals.

WE announced with much regret last week the death of Dr. Guthrie Rankin, which took place on September 14th at Helford, Cornwall. He was the son of David Rankin of Kilmarnock, Ayrshire, and was born there in 1854. After studying medicine at the University of Glasgow he obtained the qualifications of the Scottish Colleges, and the M.B.Glas. degree with commendation in 1880. Two years later he proceeded M.D., and obtained the membership of the Royal College of Physicians of Edinburgh, becoming Fellow in 1891. In 1896, after he had begun practice in London as a consulting physician, he obtained the membership of the Royal College of Physicians of London, and was elected Fellow in 1908.

Dr. Guthrie Rankin was for several years examiner in medicine at Glasgow University, lecturer on medicine in the London School of Clinical Medicine, physician to the Dreadnought Hospital, Greenwich, and physician to the Royal Waterloo Hospital for Children and Women. His connexion with the Seamen's Hospital Society began in 1899, and he took a prominent part in the establishment of the London School of Clinical Medicine in 1905. He resigned the post of visiting physician to the Dreadnought Hospital in 1917, and was elected consulting physician to the Seamen's Hospital Society. Dr. Rankin's early experience of general practice served him in good stead as a consulting physician. He well knew the importance of common disorders, and his straightforward clinical lectures and papers on such subjects as duodenal ulcer, glycosuria, fatigue dyspepsia, broken sleep, and the highly-strung nervous system, which appeared from time to time in our columns, proved helpful and interesting to a wide medical audience. He was a clear and effective writer, a sound clinician, and a wise and practical adviser.

Lieut.-General Sir WILLIAM BABTIE, K.C.M.G., V.C., writes:

To many men and women the passing of Dr. Guthrie Rankin at his Cornish home has brought that personal sense of bereavement which is confined, as a rule, to the loss of near relatives and dear friends. It is just that: he was a dear friend.

The great gifts of sympathy and understanding were his in heaped measure, sympathy based on a kind heart and understanding on a deep knowledge of men. He was in the estimate of many the ideal physician, for his experience

was founded on long years of general practice; he knew the human constitution from the cradle to the grave, a knowledge fortified by wide reading, close observation and responsibility for the care of health in youth, maturity, and age. A kindly Scot from the land of Burns—of whom he was a fervent admirer—Rankin began his professional life in Scotland, and it is related that when a humble patient there was told that his doctor was going to settle in England he said, "Weel, I'll go too," and go he did, living for the rest of his life in the near neighbourhood of his trusted physician and friend.

His country work—it was before the days of motors—was excessive and culminated in a serious breakdown in health and at the end of a long illness he settled in London, determined to abandon general practice, and devote himself to medicine. Without influence—he was a Scottish graduate unconnected with any of the great London schools—he fought his way to a complete success. He was not a specialist, but there were few of the special branches of medicine which he did not know sufficiently well to be able to appraise, from the point of view of the general condition of his patient, the expert opinions of those whose assistance he was always careful to seek.

The need and the scope for physicians with Rankin's discriminating experience and training is great, for the discerning patient of to-day is too wise to be solely dependent upon methods whereby the sick man is apt to be lost sight of in a fevered study of the special developments of a general condition. Rankin's teaching was catholic and classic in its simplicity, and readers of his professional writings will recall the pleasure and profit they derived from his lectures and papers written without desire to parade learning, and with the sole purpose of being helpful to ailing men and women. And now after years of ill health and latterly of deep sorrow Guthrie Rankin has gone, following at a short interval his beloved helpmate, whose death broke his heart.

A colleague sends us the following appreciation:

Hundreds to-day are mourning Dr. Guthrie Rankin's death. He was beloved by all who were privileged to know him intimately, and worshipped by his many patients. With his, at times, brusque manner, his sense of honour and uprightness, his horror of charlatanism, and his tenderness of heart, he combined all the elements of a great physician and a lovable personality. His house alone testified how dear his patients held him, for on all sides were proofs of their appreciation. His work was his hobby, and he always gave his best. His charm of character will always remain as a dear memory and a sacred trust to the many who now pay him homage and respect.

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THE LATE PROFESSOR ALEXANDER MACALISTER.—Dr. Charles F. Harford writes: I should like to add a few personal reminiscences of the life and work of the late Professor Alexander Macalister to those which have already appeared in the JOURNAL, as I was one of the earliest of our old professor's pupils at Cambridge. We were conscious at the time—and this is a remarkable fact—that this man who had recently been brought to Cambridge was making history, so far as the Cambridge medical school was concerned. It is no disparagement to the eminent scientific teachers who preceded Macalister, or who were his colleagues, to look upon him as the genius of the modern medical school at the university. In particular it involves no slight to that master of men, Sir George Humphry, who as a teacher of surgery was inimitable. There could hardly have been two men more dissimilar in their gifts and methods. I remember one incident when Humphry, on his way to his surgical class, passed through a room where Macalister was demonstrating some of his pet anatomical anomalies. I suppose that Humphry, with the look of mischief in his penetrating eyes, must have lingered for a moment to hear what was going on. Macalister turned to his predecessor and said, "Have you ever seen this abnormality? It only occurs once in every 200,000 cases," or words to that effect. The only answer as Humphry ran from the room stopping his ears was "Dreadful man!"

When "Mac," as we used to call him, took up his work, the dissecting-room accommodation and the anatomical department in general was carried on in hopelessly inadequate surroundings, and it was not long before a corrugated iron building was erected as a temporary dissecting room, precursor of the splendid buildings which he was able to bring into existence later on. I had the honour to serve under him as one of a group of assistant demonstrators whom he gathered round him, and to know him was to love and honour him. With remarkable humility he possessed all round abilities which are not often combined in the person of one man. Leaving aside his great position as a scientific anatomist, as Professor Barclay-Smith has said, he was an expert in quite other spheres. I was told that at one time he would sometimes as a hobby answer the questions of a theological tripos paper before breakfast.

One of my later recollections of him which shows his interest in the work of his old students was the arrangement of a lecture which I was to deliver in his anatomical theatre to a university audience on the preservation of health in the tropics. The professor was keenly interested in all forms of foreign missionary enterprise, and encouraged those of us who were going abroad as medical missionaries. One cannot be too thankful for one's association with the Cambridge Medical School of the eighties with its distinguished and helpful teachers, but Macalister stands out as the most progressive of all, whose organizing ability has been a valuable asset to the university which it was his delight to serve.

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MIDSHIPMAN ARTHUR WILFRID EDGECOMBE, R.N., elder son of Dr. W. Edgecombe of Harrogate, was killed in the mining of H.M.S. *Verulam*, in the Gulf of Finland, on September 4th, aged 19.

# Medical News.

DR. J. A. CARR has been appointed to the Commission of the Peace for the West Riding of the county of York.

DR. J. A. NIXON, C.M.G., has now completed his military duties and has returned from active service to resume work at the Bristol Royal Infirmary.

THE annual dinner of past and present students of St. Mary's Hospital Medical School will be held at the Connaught Rooms on Wednesday, October 1st, at 7 o'clock, with Sir Almroth Wright, K.B.E., F.R.S., in the chair.

THE opening of the winter session at King's College Hospital Medical School will take place on Wednesday, October 1st, at 3 o'clock, when Viscount Hambleden will preside, and the Right Hon. T. J. Macnamara, LL.D., Parliamentary Secretary to the Admiralty, will deliver the introductory address. Academic dress will be worn.

SIR ROBERT ARMSTRONG-JONES, C.B.E., M.D., will deliver four lectures on physic at Gresham College, Basinghall Street, E.C., on October 14th, 15th, 16th, and 17th, at 6 o'clock. The subject of the lectures will be the evolution of military medicine and surgery from ancient times and the medical lesson derived from the great war.

THE opening of the eighty-fifth winter session at the Middlesex Hospital Medical School will take place on Wednesday, October 1st, at 3 p.m. Sir John Bland-Sutton, LL.D., F.R.C.S., will deliver an introductory address, and the prizes will be distributed by Surgeon Rear Admiral Sir Robert Hill, K.C.M.G., Director-General Royal Naval Medical Service. The annual dinner of past and present students will be held at the Holborn Restaurant on the same evening, at 7 o'clock, with Colonel the Earl of Athlone in the chair.

IN November, 1918, it was proposed to establish a permanent war memorial at Guy's Hospital in order to commemorate, not only the sacrifice of the many Guy's men who gave their lives for their country, but also the devotion of all those who have rendered professional services to the empire, whether at home or abroad. A representative committee of governors, members of the staffs, and past and present students was formed to collect funds and to carry out the wishes of subscribers as to the character of the memorial. The fund will be closed on September 30th, and a general meeting of subscribers will be held in October.

THE British Orthopaedic Association will hold its annual meeting on Friday, November 14th, at the rooms of the Medical Society of London, 11, Chandos Street, W.1. The President's address will be given at 10 a.m., and at 10.30 a discussion on cineplastic amputations will be opened by the President, and continued by Mr. T. H. Openshaw, Mr. S. Alwyn Smith, Sir J. Lynn-Thomas, and Mr. F. M. Fitzmaurice-Kelly. Mr. W. H. Trethowan will read a paper on injuries of the crucial ligaments; and in the afternoon a discussion on birth paralysis will be

opened by Mr. H. A. T. Fairbank and Mr. Harry Platt, and Mr. A. S. B. Bankart will read a paper on the operative treatment of spastic paralyses. The association dinner will be held at 7.30 p.m. On November 15th hospital demonstrations will be arranged by London members, and Mr. D. McCrae Aitken will arrange a visit to the Country Hospital for Cripples at Pinner.

# Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

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1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

## QUERIES AND ANSWERS.

### ASTHMA POWDERS.

"ANTISPASMODIC" inquires the probable reason of the failure of an asthma powder to burn. It was compounded after sending for the drugs from England to a far country, and is the conventional mixture of approximately equal parts of datura, lobelia, black tea, and potassium nitrate, all carefully dried and reduced to different finenesses of pulverization and thoroughly mixed. Various proportions, including those given in Whitla's *Dictionary of Treatment*, have been used. He would be glad, not merely of a fresh formula, but of one from someone who has compounded a mixture and made it burn.

### SCHOOLBOYS' WEIGHT.

DR. RICHARD HAMILTON (Parkstone) writes: I should be obliged if any medical officer of a large school could authoritatively confirm or deny the truth of the following statement as it applies to (1) day scholars; and (2) boarders:—"It is the rule rather than the exception for a boy to lose in weight during a school term, owing to the call on his nervous and physical energy entailed by both work and play."

### INCOME TAX.

"J. C. T." inquires as to the effect of taking over an additional practice, the terms being that he should make periodic payments to the amount of one-half the receipts from the first two years' working of the practice.

*** The proportion paid over to the executors of his predecessor represents a payment in instalments made by him for the purchase of the practice—that is, they are part of his income paid away as capital. If he had purchased the practice outright for, say, £1,000, that sum clearly would not have been an expense of carrying on the practice, and the essence of the transaction is not affected by the spreading out of the purchase payment over a period.

The cash basis is fair only where there is reason to assume that the old debts being paid in the year are substantially equivalent to the unpaid debts being put on the books for the same year. Our correspondent will not be liable to tax on old debts received after his connexion with the practice ceases, nor are his predecessor's executors now liable on the payments which are being made to them instead of coming into the practice.

When the cash basis is set up at the end of three years, the payments for debts now treated as receipts cannot be excluded. It is true, as "J. C. T." says, that he will in a sense pay tax twice on those debts; but that is assumed to be balanced by the debts on which he will *not* then pay because the amounts have not been received by him.

"CAR OWNER" inquires whether the refusal of the local surveyor to make an allowance for depreciation of car is legally justified.

*** Yes; the allowance for depreciation is limited under the Income Tax Act to the assessment of "the profits or gains of a trade." The only allowance due in the case of professional profits is cost of replacement of the car as and when incurred. This is one of the matters which will be put forward by the British Medical Association in its memorandum to the Royal Commission on Income Tax.

## LETTERS, NOTES, ETC.

### THE NOTIFICATION FEE.

DR. E. F. O'FERRALL (London, S.W.) writes: The following transaction shows not only an ingenious method of reducing the notification fee to disappearing proportions, but also how the State may make a considerable percentage out of the business. Having notified a case of phthisis, I was informed by our esteemed M.O.H. that, having occurred in the Westminster area, he had transferred the notification to that district. So far so good. But now the farce commences. In due course I receive from the Westminster Council a cheque dated August 20th, 1919, measuring about 8 in. by 6 in., bearing the City arms, and of course two penny stamps, for the sum of 1s. This I pay into my bank on September 12th, but I am informed that payment has been refused as the cheque is "out of date." Whereupon, the potential expenditure in stamps having now amounted to about another 1s., or 100 per cent., I write to the representative of the borough council in question, begging him to refrain from sending me a similar guerdon in future, but to bestow it preferably upon the crossing sweeper at the corner.

### THE R.A.M.C. SPECIAL RESERVE.

"S. R. C." writes: The following points occur to me on reading through the article on the Special Reserve of Officers R.A.M.C. in the JOURNAL of September 20th: (1) The annual gratuity should not stop at age of 40, as is now the case. (2) The Special Reserve Officers should have a guarantee that in case of general mobilization of the medical profession their pay should be at least equal to that of men who receive temporary commissions. (3) The seniority of an officer should date from the time of receiving his commission, so that if mobilized after five years he would get a rise of 2s. 6d. a day, and again after ten years, as in the Regular R.A.M.C. under the new Royal Warrant. (4) A scheme is needed in respect of the teaching, training, and subsequent examination of officers for promotion to major. (5) Promotion above the rank of major, by selection alone, would open the field to favouritism. A good man may be in a country practice and out of touch with his superiors, during times of peace. (6) Neither branch would approve your correspondent's suggestion for transfer to the Territorial Force.

### WAR HONOURS.

"T. E. W." writes: Having returned to enjoy the blessings of the land *without* the fruits of my labours, I have read "Permanent R.N.V.R.'s" letter (September 13th, p. 367) with much interest. Being myself one of this band of heroes, I feel that I would fain remind him of the old saying that "The greatest of all distinctions is to be without any." Surely our record is sufficient in itself. We were there, we were ready, and we went. The Service received us gladly, and I have on many occasions heard their views upon the treatment we received—in the intervals between requests for dental treatment, as our "ocean wave" stripe and uniform was identical with that of temporary surgeon-lieutenants (D.) R.N.V.R. The fact is that we did our bit and came through—most of us—with plenty of sea-time to our credit. Personally, as I sit amid the ruins of my practice, I am proud to have been there; and I would do it again, though I am not a man of private means. I may be poor, but, thank God, I am proud.

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 39, 40, 41, 42, 43, and 44 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 36, 37, 38, and 39.

THE following appointments of certifying factory surgeons are vacant: Almondsbury (Gloucester), Leven (Fife), Maldon (Essex).


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